

JPRS 83783

28 June 1983

# USSR Report

MILITARY AFFAIRS

No. 1778

**FBIS** FOREIGN BROADCAST INFORMATION SERVICE

#### NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

#### PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

28 June 1983

# USSR REPORT MILITARY AFFAIRS

No. 1778

## CONTENTS

### ARMED FORCES

Country Marks 38th Anniversary of V-E Day (SEL'SKAYA GAZETA, 9 May 83, SOVETSKIY PATRIOT, 9 May 83).....	1
Article by Arm Gen Altynin Arm Gen Shabanov Discusses Military Strength, by V. Shabanov	
Army-Navy Day Article by Leningrad MD Commander Snetkov (B. Snetkov; LENINGRADSKAYA PRAVDA, 23 Feb 83).....	7

### AIR DEFENSE FORCES

Articles in Celebration of Air Defense Forces Day (Various sources, 10 Apr 83).....	10
Interceptor Training-Flight Incident, by A. Khorobrykh	
Air Defense Traditions' Role, by S. Bobylev	
Air Defense Missile Site, by N. Sautin	
Moscow Air Defense District, by V. Ponomarev	
Air Defense Today Portrayed, by I. Mal'tsev	
Remote Missile Site, by A. Petrenko	
Air Defense Forces Lauded, by S. F. Romanov	
Missile Launchers in Mountains, by Yu. Dmitriyev	
Air Defense Chief Writes, by A. I. Koldunov	

### STRATEGIC ROCKET FORCES

Interview With Tolubko Concerning World War II, Current World Situation (V. F. Tolubko Interview; LITERATURNAYA GAZETA, 4 May 83).....	41
---	----

## CIVIL DEFENSE

Shelter Construction, Equipment Described (G. Penzev; VOYENNNYYE ZNANIYA, Mar 83).....	46
Lessons in Use of Gas Masks, Respirators (V. Viktorov; VOYENNNYYE ZNANIYA, Mar 83).....	52



## ARMED FORCES

### COUNTRY MARKS 38TH ANNIVERSARY OF V-E DAY

Article by Arm Gen Altynin

Minsk SEL'SKAYA GAZETA in Russian 9 May 83 p 1

[Article by Arm Gen A. T. Altunin, deputy USSR minister of defense and Hero of the Soviet Union: "The Immortal Feat"]

[Text] Victory Day is a holiday that is infinitely dear to the Soviet people. With great enthusiasm and gratitude we pay a tribute of profound respect to the courage and unselfishness of those who bravely and skillfully fought, spilled their blood, and gave their lives for the freedom and happiness of our Homeland, and for those who labored heroically in the rear.

This year the holiday of Victory Day is being celebrated in our country in an atmosphere of great political and labor enthusiasm aroused by the resolutions of the November 1982 Plenum of the CPSU Central Committee. The program for further raising the well-being of the working people and strengthening the economic and defense might of our country, outlined by the 26th Party Congress, is being consistently put into effect.

The war thrust upon us by German fascism was the greatest military conflict between socialism and the striking forces of imperialism and the hardest, most bitter trial ever experienced by our country. It became the Great Patriotic War of the Soviet people for the freedom and independence of their socialist Homeland.

Particularly severe trials had to be undergone at the beginning of the war when the enormous army of the Nazis and their satellites, mobilized in advance and intoxicated with the poison of chauvinism and racism, drove deeply into the territory of the Soviet Union. We war veterans remember this difficult time.

Everyone who personally experienced the disasters of the first months of the war, who saw the blood and death of his comrades-in-arms, and abandoned our cities and towns with pain in his heart, lived constantly with a firm belief in that bright hour when the Soviet people and their army would gather their forces, stop the advance of the fascist plague, and turn the enemy back.

Under the leadership of the Communist Party the country was turned into a unified military camp. Soviet people lived by the slogan: "Everything for the front, everything for victory!"

The victory of World War II was achieved by the combined efforts of the peoples and armies of the anti-Hitler coalition, by all the peoples who fought vigorously against the German fascist aggressors and their henchmen. But the Soviet Union and its armed Forces made the principal contribution to the defeat of the aggressors. Throughout the war the Soviet-German front drew the bulk of the forces and means of Hitler's Germany. It was on this front that 607 enemy divisions were smashed and the largest share of his aviation, artillery, and tanks were destroyed.

The victory in the Great Patriotic War showed convincingly that the sources of the strengthened might of the Soviet people lie in the socialist social and state system, its indisputable superiority to capitalism, and our socialist ideology. The indestructible alliance of the workers and peasants and the great friendship of the peoples of the USSR were the principal sources of the victory. The socialist economy was fully adequate to the extremely difficult challenge of supplying the troops with everything they needed. The unity of the front and the rear and the army and the people became the decisive condition in defeat of the enemy.

The invincible might of the USSR Armed Forces and the superiority of Soviet art of war insured our victory in the Great Patriotic War. The men of the army and navy demonstrated unprecedented dedication to their Homeland, people, and the Communist Party and showed great heroism and a high level of military skill.

The Communist Party, the guiding and directing force of Soviet society, inspired and organized the victory of the Soviet people and their army. Under exceptionally difficult conditions the party was able to reorganize the entire life of the country on a military footing, mobilize the Soviet people for the holy struggle against the fascist aggressors, and achieve complete victory over fascist Germany.

Our people suffered enormous losses. More than 20 million sons and daughters of the Soviet Fatherland died in this war. We also remember that the Nazis destroyed 1,710 Soviet cities and worker communities and burned and looted more than 70,000 towns and villages. This sacred memory inspires us today to be vigilant and work tirelessly to bolster the cause of world peace and international security.

The USSR Armed Forces today have the latest means of combatting an aggressor. The army and navy have powerful intercontinental and medium-range strategic missile complexes, the latest classes of tanks and self-propelled and other forms of artillery, effective means of air defense that make it possible to combat successfully all existing and prospecting enemy means of air attack, sophisticated aircraft with excellent fighting and flight characteristics, and modern nuclear-powered submarines, aircraft carriers, and guided-missile and antisub ships.

Civil defense has an important part to play in insuring reliable protection of the socialist Fatherland. It is a constituent part of the system of general nationwide defense measures.

The present international situation increases the demands made of our Armed Forces and their combat readiness. The role of the time factor has risen sharply. Time required to take essential measures is being reduced. We need a more flexible approach to organizing the transition of the Armed Forces from peacetime to a wartime status and skillful organization of the actions of army and navy forces.

At the present time the army and navy have developed broad socialist competition under the slogan: "Raise vigilance and reliably insure the security of the Homeland!"

The results of the winter training period demonstrate that the personnel of the Soviet Armed Forces have made further progress in training, fulfilled the socialist obligations they assumed, and taken one more step forward to improve their level of military skills, raise combat readiness further, and stand combat watches vigilantly.

The Soviet people can be confident that our valued Armed Forces, in close solidarity around the Leninist Communist Party and in combat cooperation with the armies of the fraternal socialist countries, will continue to perform their patriotic and international duty with honor and will vigilantly guard the achievements of socialism. They are ready to deliver a devastating retaliatory blow to any aggressor!

#### Arm Gen Shabanov Discusses Military Strength

Moscow SOVETSKIY PATRIOT in Russian 9 May 83 p 1

[Article by Arm Gen V. Shabanov, deputy USSR minister of defense for armaments, Hero of Socialist Labor: "The Heroic Feat of the People"]

[Text] Today the Soviet people and their fighting men, the working people of the fraternal socialist countries, and all progressive mankind are celebrating the 38th anniversary of the Victory over Fascist Germany. The heroic feat of the Soviet people and USSR Armed Forces in the Great Patriotic War has been eternally recorded in gold letters in the book of human history. It will always be a living example in the struggle for the freedom and happiness of peoples.

On these days in May Soviet people pay a tribute of respect to the courage and heroism of the men of the Red Army who in desperate battle against the enemy defended the freedom and independence of the Homeland and liberated the peoples of Europe from the yoke of Hitler. The Soviet Union blocked the fascist aggressors' road to world conquest. The USSR was able to do what no single Western country could: deprive the aggressor of the main thing, the means of waging war. If the total losses of the German fascist army in World War II are taken as 100 percent, the Wehrmacht lost more than 73 percent of its personnel, up to 75 percent of its tanks and assault guns, more than 75 percent of its aircraft, and 74 percent of its artillery guns in fighting against the Red Army.

Victory Day. We celebrate this holiday as an outstanding event that commemorates the invincible might of socialism and communist ideology and the inexhaustible potential of the Soviet state and social system. It reflects the immortality of the world historical feat of the Soviet people and the valiant USSR Armed Forces.

Our road to victory was long and hard. The decisive event of the first year of the war was the historic battle of Moscow, whose result dispelled the myth of



the invincibility of the Nazi army and reduced the adventuristic plan of "blitzkrieg" to ashes. The major stages on the road to final victory were the battles at Stalingrad, for the Caucasus, and in the Kursk salient, the crossing of the Dnepr, and the brilliant offensive operations of our Armed Forces in 1944. The crushing blows of Soviet troops in 1945 completed the defeat of fascist Germany.

The main source of our victory and of the might of the Soviet Army and Navy was the wise leadership of the Leninist party, the organizing and directing force of our society. The party raised the people and our fighting men for the just Patriotic War, inspired them to heroic deeds, and directed the efforts of Soviet people at the front and in the rear to the achievement of a common goal: smashing the enemy.

Soviet people demonstrated their complete trust of the Communist Party and their love for the Homeland by mass heroism at the front and in the rear. History had never before seen such steadfastness and such mass heroism. More than 11,500 people were awarded the title Hero of the Soviet Union for heroic deeds during the war years and more than 7 million people received orders and medals.

The outcome of the war was not decided only on the field of battle; it was also decided by the great struggle for metal, for combat equipment, and for grain. The reorganization of the national economy on a military footing was begun under the direction of the Communist Party from the first days of the war. People and industrial equipment were evacuated from front regions to the East. In just the first months of the war 10 million Soviet people and more than 1,500 enterprises were transferred to the eastern regions of the country. Working in any weather, sometimes under the open sky, the workers of the rear disregarded the season, installed the equipment, and immediately began producing output. Thanks to the heroic labor of the Soviet people most of the evacuated enterprises were already in operation by the spring of 1942.

The front and the rear pressed together in one mighty fist; the country became a unified fighting camp. The slogan "Everything for the front, everything for victory!" became the law of life for all the people working in the rear.

The socialist economy proved more adaptable to the transition to work in wartime than the economy of Hitler's Reich. This made it possible to use raw materials, metal, and labor with maximum efficiency in the interests of defeating the aggressor, to introduce progressive technology, to make the organization of production more sophisticated, to win the economic struggle against the enemy. During the war years the Soviet Union produced twice as much weaponry and military equipment as fascist Germany, and it was of better quality.

The engineers, designers, and builders of weapons and military equipment made a major contribution to the victory. Even before the war they were working with an eye to the future. In the 1930's, long before the onset of the age of jet aviation, jet engines were being tested in our country. New classes of tanks and artillery guns were being built. Various models of rifles were being designed and tested.

The mass patriotic organization Osoaviakhim [Society for Assistance to the Defense, Aviation, and Chemical Construction of the USSR] made its contribution

to the cause of victory over the enemy. In the very first month of the war 7.2 million Osoaviakhim members were sent to the front by mobilization or voluntarily; this was more than half of the membership of the defense Society. Its alumni showed themselves to be skillful and fearless fighting men. About 1,000 pilots who were awarded the title Hero of the Soviet Union received their initial training in Osoaviakhim air clubs.

The results of the Great Patriotic War showed convincingly that there is no force in the world which can destroy socialism and bring a people loyal to the ideas of Marxism-Leninism, dedicated to the Socialist Homeland, and united around their Leninist party, to their knees. Our victory was a great triumph for the Soviet state and social order engendered by the October Revolution, a triumph of the socialist economy, the ideology of Marxism-Leninism, the moral-political unity of Soviet society, and the fraternal friendship of the peoples of the USSR.

In the postwar years our Armed Forces have risen to a new, immeasurably higher level of development. The increased economic might of the USSR led to both quantitative and profound qualitative changes in each branch of the Armed Forces. Thanks to the constant concern of the Communist Party and the heroic labor of the Soviet people the USSR Armed Forces today have first-class military equipment and weapons which embody the latest achievements of scientific-technical progress, the talent of scientists and designers, and the skill of engineers and workers. This powerful weaponry is in the reliable and skillful hands of Soviet fighting men who are absolutely devoted to their socialist Fatherland.

The fighting men of the army and navy understand the great responsibility that the party and people have given them very well. They are constantly working to master their powerful combat equipment and weapons, improving their field, air and sea training, and raising the combat readiness of units and ships.

The USSR Constitution states that duty in the Armed Forces is the honorable obligation of Soviet citizens. DOSAAF organizations play an important part in preparing young men for military service. Young people who have gone through elementary military training in clubs and training organizations of the Defense Society fit into the rhythm of army life more rapidly, master the equipment more successfully, and receive recognition as outstanding in combat and political training and as rated specialists.

The Communist party of the Soviet Union firmly and consistently carries out Leninist principles of management of military development. As emphasized at the 26th CPSU Congress, the party and the state, taking account of the complexity of the international situation, do not take their eyes off questions of building the country's defense might for even a day. The USSR Armed Forces, formed to defend the socialist achievements and peaceful labor of the Soviet Union and the sovereignty and territorial integrity of the state, are being built and developed by the party with due regard for actually existing foreign policy conditions and the degree and nature of the military threat to the Soviet Union and the fraternal socialist countries.

The current generation of Soviet fighting men is preserving and multiplying the revolutionary and combat traditions of our people and the military glory of the heroes of the Great Patriotic War. By their irreproachable service, tireless vigilance, and constant combat readiness the personnel of the army and navy are making a worthy contribution to strengthening the defense might of our beloved Homeland.



The Warsaw Pact Organization is the reliable bulwark of the peace and security of the socialist community. The 26th CPSU Congress emphasized that the military-political defensive alliance of the socialist countries faithfully serves the cause of peace. It has everything necessary to reliably defend the socialist achievements of the peoples.

Our country is a peace-loving state. The Soviet people need lasting, reliable peace to accomplish their great constructive tasks. But we know very well that you can't get peace from the imperialists by begging. "It must be defended," General Secretary of the CPSU Central Committee Comrade Yu. V. Andropov emphasizes, "only by relying on the invincible might of the Soviet armed forces." The CPSU's concern for the security of the Homeland and for our army and navy finds an enthusiastic response in the hearts of Soviet fighting men. They are aware that CPSU leadership is the main source of the might of our valiant Armed Forces and they draw their fighting ranks even more closely around our native party.

11,176

CSO: 1801/298

ARMED FORCES

ARMY-NAVY DAY ARTICLE BY LENINGRAD MD COMMANDER SNETKOV

PM031143 Leningrad LENINGRADSKAYA PRAVDA in Russian 23 Feb 83 p 2

[Article by Col Gen B. Snetkov, commander of the Order of Lenin Leningrad Military District, pegged to Soviet Army and Navy Day: "Guarding Peace"]

[Excerpts] This year Soviet Army and Navy Day is being celebrated by all Soviet people and their glorious soldiers under conditions of tremendous political and labor upsurge generated by the decisions of the CPSU Central Committee November (1982) Plenum and the celebrations of the 60th anniversary of the formation of the USSR.

The provisions and conclusions contained in the speech by Comrade Yu. V. Andropov, general secretary of the CPSU Central Committee, at the Central Committee plenum and in the report devoted to the jubilee of our multinational state are a militant program of action for further strengthening the motherland's economic and defense might and fulfilling the historic plans of the 26th CPSU Congress and the targets for the 3d year of the 11th 5-Year Plan.

For 65 years now the armed forces of the Soviet state have been mounting a vigilant guard over the people's revolutionary gains and have wholeheartedly and devotedly served the great cause of communism. Their glorious history, development and combat path are inseparably linked with the name of V. I. Lenin and the activity of the Communist Party.

V. I. Lenin elaborated the theory of the defense of the socialist fatherland and the theoretical and organizational principles for building the army of the land of the soviets and for training and educating its personnel. He taught that any revolution is only worth something if it is able to defend itself, and warned that for as long as imperialism exists there remains an external threat against socialism and a danger of military attacks and provocations. This is why it is necessary to be always on guard, manifest high political vigilance and tirelessly strengthen the defense of the country.

The Soviet people's victory in the Great Patriotic War was of worldwide historic significance and has exerted a tremendous influence on the entire postwar development of mankind and the life of millions of people in all parts of the world.

Our victory was also a formidable warning to imperialist reaction and a harsh lesson of history for all who attempt to revise the results of the last war.

At present the U.S. ruling circles have launched a political, ideological and economic offensive against socialism. Their attempts to disrupt the established strategic balance in the world and subordinate the course of world events to their will are continuing. This also explains the position taken by the U.S. delegation at the Geneva negotiations.

The strategy of "direct confrontation" proclaimed by Washington is aimed at achieving military superiority over the Soviet Union and establishing world domination by the United States. It includes a wide circle of aggressive aims, from the delivery of a massive first nuclear strike to the waging of "limited" and "protracted" nuclear wars. Their essence is aggression aimed against the USSR and its allies with the goal of "destroying socialism as a sociopolitical system."

The attempts by the newly emerged pretenders to world domination have absolutely no prospects for success. We should not, however, ignore the existence of the large military and economic potential and powerful armed forces of the imperialist countries. The threat of war is a harsh reality of our times. Imperialism's intrigues force the Soviet Union, together with the fraternal socialist states, to display concern, serious concern, for the maintenance of defense capability at the requisite level. "To provide everything necessary for the army and navy," Comrade Yu. V. Andropov stressed at the CPSU Central Committee November (1982) Plenum, "has been and is considered by the Politburo to be obligatory, and especially in today's international situation."

The defense of the socialist fatherland is defined in the USSR Constitution as the most important function of our state. Thanks to the constant concern of the party and the entire people our armed forces are equal to modern requirements in terms of their technical equipment. They are a powerful combat organism and have everything they need for their motherland's reliable defense.

The strategic missile troops have enormous combat potential at their disposal. Their arsenal includes intercontinental ballistic missiles with nuclear warheads of colossal destructive power and great accuracy. The ground forces are improving continuously and their firepower, mobility and maneuverability are growing. Qualitative changes have occurred within the air defense forces and the air force. The modern navy has fearful combat might. But the main strength of the Soviet armed forces lies in the people and their boundless devotion to the ideals of communism, the party's cause and the motherland, in their high combat expertise. The 26th CPSU Congress gave a high assessment of the Soviet army and navy, a durable fusion of high levels of technical equipment, military expertise and uncrushable morale comprises the combat potential of the Soviet armed forces."

A most important role in the maintenance of our troops' constant readiness to repulse aggression is played by combat training, during which commanding officers, staffs and political organs take fully into account the fact that

incomparably higher demands are made of soldiers in modern conditions than before. War marshal of the Soviet Union, D. F. Ustinov, member of the CPSU Central Committee Politburo and USSR defense minister, points out, demands skillful actions on the battlefield under conditions when the enemy uses mass destruction weapons and other powerful fire means: The ability to withstand tremendous spiritual and physical tensions; high psychological composure; methods of action enabling lesser forces to inflict a decisive defeat on the enemy; and much more.

CSO: 1801/264

## AIR DEFENSE FORCES

### ARTICLES IN CELEBRATION OF AIR DEFENSE FORCES DAY

#### Interceptor Training-Flight Incident

Moscow SOVETSKAYA ROSSIYA in Russian 10 Apr 83 p 6

[Article by A. Khorobrykh: "I Assume Control"]

[Text] Senior inspector pilot Col I. Ye. Zhukov made this decision in a critical situation.

They got acquainted during the preliminary preparation for flights, and, as is said, they found a common language at once. Capt Abalentsev proved to be a thoughtful and competent pilot, who knew well the fighter-interceptor, which was new to him. He had already completed the transition training program for medium altitudes. Now Col Zhukov was to show him the peculiarities of piloting the machine at supersonic speeds and high altitudes.

Ivan Yefimovich has a multitude of such flights to his credit: he has spent 2,500 hours in the air. He has received the rating of Military Sharpshooter Pilot. He is permitted to do instruction work by day or night and in any kind of weather. And there is, perhaps, no National Air Defense Force aviation regiment that has no students of his or at which his arrival has not left an appreciable mark in improvement in training methodology and an increase in flight safety.

During engine start, taxiing out and takeoff, Capt Abalentsev acted with maximum precision. He met expectations while gaining altitude and in maneuvering at medium altitudes. "He understands," the inspector thought contentedly. "It is not in vain that he wears the chest emblem of Military Pilot First Class."

Meanwhile, the interceptor had passed through the lower boundary of the stratosphere and transferred smoothly to horizontal flight. The acceleration could begin. Back on the ground, Lt Col Zhukov had advised Abalentsev to do it with a slight descent.

"We save a few seconds," he explained, "and fuel is also saved."



Capt Abalentsev switched on the afterburner in accordance with a distance calculation and pushed the control stick very slightly away from him. Col Zhukov started a stopwatch. Everything was going according to the mission.

The sound barrier fell behind. The airspeed indicator needle was coming right up to the assigned reading.

"Climb!"--the inspector commands.

The interceptor raised its nose vigorously and the most surprising thing began: the machine, devouring kilometers of altitude, continued to increase speed. Ivan Yefimovich knew excellently that that was how it should be. It was in such modes that the aircraft was considered to be of the third generation. But, as much as he flies, he never ceases to be surprised by the mighty power of the interceptor.

In the stratosphere, straight flight on a supersonic airplane creates an illusion of stillness and calm. In order to avoid this, the inspector points out to the pilot the elements of flight in the so-called "side channel." In other words, he makes banks and asks Abalentsev to repeat them. He copes excellently also with this task.

As they say, the pilot found out during flight the peculiarities of flying at an intermediate altitude, when the flight speed is more than twice the speed of sound.

How many times he said to himself, "He works cleanly."

Just seconds remained before starting a turn onto a new course during the climb. Flight speed had not decreased one iota.

"In this mode," the inspector had warned Abalentsev the day before, "a peculiar shroud forms over the air intakes. The air becomes visible. A light trembling of the whole machine appears. In order to eliminate it you must ease the stick away from you...."

However, on this occasion Capt Abalentsev did not manage to use this recommendation. Suddenly a banging resounded inside the machine--there was a shock.

A quick check of the instruments. The engines are operating normally. Only one of the needles has moved from its place. A trifle? There are no trifles in the air. What is the most terrible thing in the sky? An engine stopping, fire, loss of control?...

"Try the control....," the inspector said to the pilot over the aircraft's intercom system.

The machine shook from wing to wing, obeying the captain's will. Col Zhukov did not hurry to take control of the interceptor. An extreme situation is also an examination for the student. It will help to inspire in him confidence in his ability to fly professionally and competently an aircraft that is new to him.

"Increase the climb angle," was the new command to the pilot.

Abalentsev now began to carry it out, and Zhukov sensed that the stick had barely moved from its position, had come across a new obstacle.

"Apparently the ARU [automatic aircraft control system]--the automatic device for regulating the forces--has failed," Zhukov thought, and he reported this hypothesis to the flight control officer.

Motion of the stick had been restricted, as a matter of fact, for another reason, which was not connected, strange as it may seem, with the control system, the origin of which can be ascribed to a category of chance, which depends neither upon the machine's design nor the people or its servicing.

But they found out about this later, after the landing, when the pilots turned in a report of a defect. But meanwhile the interceptor was thrashing about the stratosphere at a speed twice that of sound. What to do? You do not establish a landing angle with the reserve of stick movement that they had at their disposal. Does that mean ejection?...

"Think, inspector, think," the colonel encouraged himself. "The stick motion is less than one third, the stabilizer has practically no motion at all.... But in the dense layers of the atmosphere and at subsonic speed, the stabilizer's effectiveness increases. Thus, it is the sole chance for saving the machine."

"We shall try to land," Zhukov transmitted to the flight control officer.

All this time, as before, Capt Abalentsev was piloting the machine. He did not turn off the afterburner, but, on the inspector's command, he shifted the interceptor toward a descent. But this was done not by changing the stabilizer's position but by decreasing the speed. Col Zhukov did not exclude the possibility of locking the stick in the forward position. Then one could not speak about a landing....

We are conversing with Ivan Yefimovich in his cozy apartment. A head of hair ashen from grayness, tired hands, a mild voice. He draws a diagram of the path of the memorable flight, often resorting to a model of an interceptor for help. This will help me to understand visually all the reversals of fortune of the unusual descent and of the first, dangerous approach for landing.

"During the approach to the airfield," my collocutor states, "flight control officer Maj Appolonov gave the command to pass over the takeoff runway and to simulate a landing at altitude. However, when gliding we had not made use of the control stick. And, as was explained later, this was the only correct solution."

They made the landing approach with two 180-degree turns. They entered the radio glide path and they were at the prescribed altitude over the outer marker. Everything was going in accordance with the established procedure before

reaching the inner marker. They were to call the marker, when the aircraft went toward the ground uncontrollably.

Col Zhukov took the stick with both hands. It did not budge a bit. And the ground--here it was alongside.

"Power!" the inspector commanded....

"Those were the longest seconds of my life," Ivan Yefimovich confessed after the landing.

The engine's thrust rose, but not as fast as the pilots would have liked. Another instant and it was necessary to give the order to eject. But now the interceptor slowly nosed up.

"I will take control!" said the inspector, guiding the machine away from the ground, which was only 5 or 6 meters away.

The second approach for landing was different--from a great distance and along a very gentle glide path. Now Col Zhukov was piloting the interceptor. And the landing was completed successfully. Soon there appeared on Ivan Yefimovich's parade uniform the Order of Lenin and a Gold Star Medal.

#### Air Defense Traditions' Role

Moscow KRSNAYA ZVEZDA in Russian 10 Apr 83 p 2

[Article by Col-Gen S. Bobylev, member of the Military Council and chief of the political administration of the Air Defense Forces: "People and Traditions"]

[Text] All Soviet people and servicemen of the army and navy are today solemnly celebrating Air Defense Forces Day. In this current, core year of the 11th Five-Year Plan, this day is being marked in an atmosphere of inspired labor by the Soviet people and its armed protectors to implement the decisions of the 26th Party Congress and the May and November 1982 CPSU Central Committee Plenums. "The spirit of getting the job done and not big words--this is what is needed today to make the great and powerful Union of Soviet Socialist Republics still stronger," CPSU Central Committee General Secretary Comrade Yu. V. Andropov emphasized in the report, "Sixty Years of the USSR."

A new surge in the labor and political activeness of the Soviet People was stimulated by the CPSU Central Committee decree, "On the 80th Anniversary of the Second RSDRP [Russian Social-Democratic Working Party] Congress."

Air defense troops, like all army and navy personnel, who live with the same intentions and concerns as all the Soviet people, unanimously and enthusiastically support the domestic and foreign policy of the Communist Party and its Leninist Central Committee. They see that it is their duty to protect reliably the motherland's peace and security, to fulfill the assigned mission with

honor and to augment the glorious combat traditions of the older generations of the Air Defense Forces. And these traditions are truly remarkable.

Among the many exhibits at the Air Defense Forces' Museum is a photographic copy of a document that was composed in the spring of 1918. The chief of the Air Defense Section of Petrograd asked the staff: "I ask your permission to establish machinegun posts at the most important places in the city of Petrograd and at buildings that are of great state importance, in order to fire on unfriendly airplanes."

Twenty-five years passed, and in April 1943 another document sounded a historic exchange--a request of the Military Council of the Leningrad Army air defense for antiaircraft gunners to protect GES No 5 from aerial strikes by the Hitlerite aggressors. "What does GES No 5 mean for Leningrad?" the request stated. "It is the heart of the city, it puts into motion the machine tools of plants and factories that are working for the front. It means shells and guns, water and bread....The responsibility for protecting GES No 5 and other facilities of the hero city that has been vested in us is great....You fight as did the Stalingraders. You hit the enemy wherever he appears. This is the main thing that our city requires of us."

Each of these documents, although separated by decades, conveys in its own graphic and precise way the nature of the combat destiny of the Air Defense Forces. Their birth is inseparably connected with the name of V. I. Lenin, who right away, after the victory of the Great October, personally took charge of the matter of organizing a crushing defeat of the first counterrevolutionary revolt and the defenses of the cradle of the revolution--Petrograd--and was constantly concerned about air defense of the city. On 30 October 1917 the defenders of the aerial borders of the youthful Republic of the Soviets opened up their combat record in the Pulkovo area, hitting the first White Guards airplane.

The Air Defense Forces courageously and skillfully fought the enemy on all Civil War fronts. Two antiaircraft batteries and one aviation fighter division were awarded Honorary Revolutionary Red Banners of the VTsIK [All-Russian Central Executive Committee]. Sixteen aviators were honored with what was then the motherland's highest award--the Order of the Red Banner. Among them were fighter pilots I. Pavlov, A. Petrenko and others.

The Air Defense Forces, which were given birth by the Great October, were supplied during the 1920's and 1930's with combat equipment and armament that was the latest for those times. By the start of the Great Patriotic War, the Air Defense Forces had more than 3,600 antiaircraft guns of medium and small caliber, 650 machineguns, 45 detection radars, and the 40 fighter-aviation regiments had about 1,500 aircraft.

Air defense soldiers performed hundreds of unblemished feats during the Great Patriotic War. In their combat annals is the brilliant air defense of Moscow and Leningrad and other large industrial and administrative centers of the country that was organized and implemented. In its pages are the heroic defense of Stalingrad's skies and the participation of air defense soldiers in



engagements at Kursk and the Dnepr and in other war battles. These concerned defense of the most important communications, air cover for troop groups, airfields and paratroop landing areas....

The country of the Soviets evaluated highly the military valor of its loyal sons. The title Hero of the Soviet Union was conferred on 92 servicemen who distinguished themselves especially in battles. Fighter pilot Capt A. Karpov's bravery was twice recognized by Gold Star awards. Thirty-four servicemen were recorded forever in the personnel rolls of air defense units. It was they, and thousands of other defenders of the motherland, who made meaningful contributions to the struggle for strategic air supremacy, having destroyed more than 7,300 enemy aircraft. It was they who destroyed a large number of tanks, armored vehicles, guns, mortars and infantrymen of the enemy.

The Air Defense Forces are troops who are constantly combat ready. Their development has been based upon comprehensive considerations of the lessons of past wars and postwar experience, modern achievements and the prospects for developing military science and technology.

First-class armament and combat equipment have been supplied to our antiaircraft missile troops, air-defense aviation and radar troops. The introduction and wide use of automated control systems and of high-speed communications equipment enable commanders and staffs to adopt optimal variants of decisions during battle and to use air-defense combat resources effectively and in the shortest times possible.

Great qualitative changes have occurred also in personnel. The Air Defense Forces are assigned excellent officer personnel, who possess the best ideological tempering and high professional training. More than 95 percent of the commanders of antiaircraft-missile, aviation and radar units have higher military or military-specialty educations. More than 70 percent of the political workers are highly rated specialists. All of them are skilled supervisors and indoctrinators of their subordinates.

Warrant officers are reliable assistants to the officers in training and indoctrinating personnel. Many of them are rated excellent in combat specialties and carry out their service obligations in exemplary fashion.

Each year youth who are increasingly well educated and technically trained pour into the troops. More than 70 percent of the lads who fill out our units have higher and secondary education. A high understanding of their patriotic and military duties and a high level of training enable the soldiers and sergeants to master modern combat equipment in a short time.

Thus, much has changed in troop personnel over the years and decades. There is, however, something more general that has been inherent in the first subunits of antiaircraft gunners and aviators that were established back at the dawn of Soviet power, in regiments of the Great Patriotic War period, and in modern air defense chasti [units] and soyedineniya [large units]. This more general thing is an unlimited devotion of the servicemen to the motherland, to the affairs of the Communist Party, to courage and bravery, and to



the highest combat skills. The baton of military glory is being transmitted from generation to generation, from the grandfathers and the fathers to the sons and grandsons. And this good tradition is being multiplied and strengthened each year.

The length of the borders of our socialist state is great. Its air frontiers are invisible but, at the same time, precise to the maximum. And each stretch of them is reliably guarded by sentries of the native land's skies. Like the patrols of border-guard outposts, they are the first to greet the sunlight in the country's Far East and the last to see it off when the sun sets in the west.

I have more than once managed to visit remote "points." I recall one of them, which, as they say in the song, "can be reached only by plane." It was lost in the boundless arctic tundra. And the severe natural and climatic conditions of the North complicate the servicemen's duties, which have many difficulties in the first place.

I will not conceal the fact that it was pleasant to find out that among the victors in the socialist competition in honor of Air Defense Forces Day was the subunit commanded by Lt Col Fedoryak. He knew how to rely on the party organization, and he united his subordinates into the army's friendly family. The subunit has for 6 years in a row now been rated excellent. The soldiers receive only the highest points for the performance of combat duty. And this is completely consistent. For 80 percent of the officers here are masters or specialists of the highest ratings. The best of them are the communists. Therefore, there is someone to show an example during combat work, and someone to teach others!

Among the right flankers of the socialist competition who have successfully completed the winter training period are missilemen, fliers, radar operators and motor-vehicle personnel, each collective having distinctive successes that give them special pride. The subordinates of Maj A. Aleshin, skillfully mastered the equipment entrusted to them and longer-range detection of high-speed speed, high altitude targets. In the subunit where Maj A. Mashnin is the party-organization secretary, all the communists are distinguished by high combat training, which has been verified by missile launches rated excellent. The aeronautical fighters of the squadron under the command of Military Pilot 1st Class Maj M. Burzak intercept "enemy" targets under the most complicated conditions....

A special word about the Guards Antiaircraft-Missile Smolensk Air Defense Regiment, which is under the command of Guards Lt Col V. Nechayev. The personnel thriftily preserve and augment the combat traditions of their regimental fellows, which were born at the Great Patriotic War fronts. The excellent results that the missilemen achieve each year are the best testimony to that. The guardsmen also substantiate worthily the trust placed in them to set the pace for socialist competition in the Air Defense Forces.

Matters are going on nicely right now for the missilemen. But at first, indeed, some in the regiment were not working with full effort, saying that the

summing up of the final results was still far away, and "we will manage to catch up with everyone with a 'final leap.'" Officers of the Air Defense Forces' Political Administration worked within the unit, gave advice and recommendations and extended businesslike help. Now the regiment's political affairs section, under Gds Maj V. Zhukov, has raised its demands, primarily for the communists. Each of them is being confronted squarely with the specific question: what have you done today to raise combat readiness, what has been your contribution to the overall mission? Party organizations of the subunits have intensified their influence in support of high effectiveness of the training process and the competition activity. The missilemen are successfully completing execution of the winter training period's tasks and their socialist commitments.

In a common effort, first-class combat equipment and armament are being studied and mastered, and soldiers of all nationalities of our socialist motherland are standing military watch. Commanders, political organs and party and Komsomol organizations are directing the efforts of their personnel toward fulfillment of the task set by the USSR Minister of Defense MSU D. F. Ustinov for the current training year, a further rise in combat readiness, a strengthening of discipline and of the state of organization, and a rallying of military collectives.

The motherland and the people assess highly the military work of their armed defenders. Today, on this holiday, on the parade uniforms of many officers, warrant officers, sergeants and soldiers—worthy successors to the glory of their grandfathers, fathers and older brothers—shine emblems of state awards.

The achievement of Military Sharpshooter Pilot Communist Col I. Zhukov has become widely known. He has served in several posts successively—as an ordinary airman to Pilot Inspector of Air Defense Forces' Aviation. Tens and hundreds of officers whose wings have gained strength in the sky are indebted to him for their growing tactical flying skill. The skill of Zhukov himself was highlighted especially brightly in one of his flights.

Once, an unforeseen, extraordinarily complicated situation arose in the air. And the pilot correctly adopted the decision to eject. However, experience and knowledge of the machine suggested to Zhukov that the supersonic airplane could be landed, although in a situation that was considered to be not without danger. A display of out-of-the-ordinary piloting skill, self-possession and cool-headedness was required. All of Col Zhukov's actions were confident and precise in the critical situation. He landed the fighter safely....The motherland recognized the officer with the Gold Star Hero.

Today the motherland's skies are being lighted up by the fireworks of holiday celebration. And today, as always, Air Defense Forces servicemen are protecting them with sharp eyes. Not for an instant do they relax their vigilance, because they know well how unsettled the world is today. Aggressive imperialist circles increasingly openly and frankly resort to threats to use armed might, even the use of various weapons of mass destruction. The current policy of the American administration has sharpened the international situation to extremely dangerous limits.

Under these circumstances, Air Defense Forces soldiers, like all personnel of the army and navy, are raising their vigilance still higher and are more persistently improving their military skills and fortifying discipline, the state of organization and regulation procedure, which will guarantee a swift rebuff to any aggressor.

#### Air Defense Missile Site

Moscow IZVESTIYA in Russian 10 Apr 83 p 1

[Article by N. Sautin (National Air Defense Forces): "Patrolled Skies"]

[Text] The Air Defense Forces protect our peaceful land from the air with a reliable shield. Antiaircraft missile troops comprise the main force for air defense. They are equipped with diverse types of antiaircraft-missile complexes which can wage battle successfully against all existing means of air attack by a probable enemy. Shoulder to shoulder with the missilemen, air-defense aviators protect the motherland's skies. Their supersonic all-weather fighter-interceptors are always ready to do battle over a broad range of altitudes and to destroy the target at distant approaches to the facilities being defended. Modern radar stations detect the aerial enemy at great ranges and at all altitudes.

The chasti [units] and subunits of air defense are meeting with new successes in combat and political training on their traditional holiday. Our current story is about the troops of one of the leading units in the National Air Defense Forces.

...An imperceptible little path twists about the forest. Branches of birch leave sticky traces of swollen buds on our clothing. The path runs to a low hill that is covered with faded, reddish brown patches of last year's grass. The van driver, as if concealing himself on the hill's side, stopped under its protective coloration.

We ascended along iron steps. The door pulls back heavily. And, finally, here it is, the command post--the eyes and brain of the regiment. The room was in semidarkness, as if it had been electrified by the steady hum of the operating equipment. The officers, who were sitting in swivel armchairs, seemed to be aloof from everything that did not relate to the sky at that moment. And it is in front of them--on the circular radar scopes.

There, up above, the scowling clouds wring out a tedious drizzling rain. They cover the horizon with a chilly mist. Here is the "electronic sky," which considers neither bad weather nor sunlight--now it glimmers with an emerald-green rainbow, now it is being modulated with brown lights.

I had just got ready to ask the officers who worked here, what was hiding behind these colors, when the speaker system sounded:

"A training target...."

Regimental commander Gds Lt Col V. Nechayev remarks:

"We still have seconds to decide, and we can gain them from the 'enemy' only in constant exercises."

And again a command:

"Azimuth....Range....Altitude....When they enter the zone...destroy them!"

After that a new one:

"Target No 2. Speed....Destroy it at range...."

Bright points slide about the electronic screen. How can one hold all this information--speed, altitude and direction of the targets--in one's memory? Modern equipment helps one to analyze and to be oriented to the situation. But a human should make the decisions.

There are four targets on the screen. How to destroy the first? The officer himself decides this question. Complicated combat equipment becomes smart only in skillful human hands.

The command post is connected by invisible threads with the regiment's subunits, where dull-white antiaircraft missiles, concealed by camouflage netting, have been frozen. I am imagining that there, at the launch positions, under a drizzling rain, the launch installations are being readied for a volley. The subunit does not know whose missile will go up. And now they wait in agonizing expectation for the order from the command post: destroy the target....

The regimental commander orders:

"The second subunit will fire."

Over the portable radio transmitter I hear the far-off voice of the guidance officer, Gds Sr Lt A. Starikov:

"We have a target....For the operators--RS...."

RS--it means that the operators, after pressing the controls for manual tracking, are right now "looking onto" the enemy with the guidance crosshairs, not allowing him to be lost among the other points running about the screen.

Right now Stariko should press the button.

"Launch!"

Two pips on the electronic sky are getting closer, and now the screen is brightened up by a foggy cloud....



...Operator Gds Pfc Renat Khamidullov and I leave the missile-guidance station cabin and breathe the spring air with satisfaction. From here we can see, concealed in an entrenchment, the squat launch installation with the missile's long thin body.

"It is beautiful when the rocket takes off?" I ask Renat.

"I don't know," he answers embarrassedly, "I haven't seen one."

"Not once in all your service?"

"Precisely. In the first place, the operator cannot even see it from his work position. Second," and Renat smiles, "the sky is peaceful. And what kind of missiles are they? They are means of defense...."

Everything that I have been speaking about was only an imitation of an enemy air raid. It would have been more tempting to describe the alarm signal sounding at night, the floor of the barracks shuddering from the continuous impact of dozens of soldiers' boots, and the crews, snatching automatic weapons from the rack, running out into the darkness and taking their places at the launch installations, and, finally, the sounding of the short command, "Launch!" and the missiles rushing upward, one after the other. Incidentally, my colleague is well known, for he was a witness of a real battle. Almost a quarter of a century ago he watched air defense soldiers bringing down the spy plane piloted by the American pilot Powers. To this day, air defense subunits and units recall this intricate missile blow.

But why be sly? No such thing occurred during my visit to the regiment. But I was glad that I had managed to see what difficult soldiers' work precedes the instant of a missile launch, and how the military work had been arranged so that the launch would take place and would be precise.

This is how service is in the Air Defense Forces. Whether in the mountains, at sea, in the forest or tundra—everywhere under our motherland's sky. And, while the border guards say that they are holding the border locked, the Air Defense Forces are keeping a bit of our peaceful sky locked. It is quiet and clear—that means that their service is going well.

In the unit where I spent several days, they do not conceive of any other service. The Guards Antiaircraft-Missile Smolensk Red Banner, Order of Suvorov, Order of Kutuzov and Order of Bogdan Khmel'nitskiy Air Defense Regiment is the initiator of socialist competition in the National Air Defense Forces. I read this line in the commitments of the advanced servicemen's collective: "Prevent every possibility of us being taken unawares." What stands behind this?

"High combat readiness," answers Gds Lt Col Valeriy Nechayev. "What should the soldiers do? They should, incidentally, instantaneously, surpass the standards, by even a bit." Indeed, the regiment is rated excellent. On signal the crews have to ready the launch installations, the guidance station operators have to detect the enemy....Readiness is also established from such tiny bits as these, which at times reach the limit of human capabilities."



Gds Lt Col V. Nechayev is an experienced commander. On his uniform jacket is the emblem of a graduate of a military academy. But it is felt that it is not easy to command a regiment on which the attention of all air-defense units is now riveted. They are not only competing with Nechayev's missilemen but also they are trying to surpass their achievements. The regiment's honor cannot allow this. And the spiral of tension in the military work gets ever more feverish. Not only the officers but also each soldier senses the burden of responsibility that this year has brought. There is nothing one can say about the commanders of the subunits but: they work with spirit.

I noticed that even the guardsmen's appearance somehow was special. The soldier acquires self-discipline, smartness and self-control. The zampolit [deputy commander for political affairs] of one of the guards battalions, Capt Yuriy Lavrin, acquaints me with them. In describing the servicemen, he invariably emphasizes that each one is a graduate of a middle school, a tekhnikum or even a vuz. It was as if he wanted to reduce things down to the thought that: service in an air defense chast' [unit] is within the capabilities only of those who are at home with machinery and are marked by high states of discipline and responsibility.

The military destiny of Yuriy Arkad'yevich Lavrin deserves a separate line. His father, Arkadiy Semenovich Lavrin, a frontline soldier, once a tankman in Mar Arm'd Trps P. Rybalko's army, served in air defense after the war. This service was not tranquil: the father moved from unit to unit, and the family wandered after him, from one remote garrison to another. So it is that Yuriy has been accustomed since childhood to changing posts.

"When I was a child, I liked that life," the guards captain said, "today the desert, the next day, see, you live in the forest. In brief, after school I firmly decided to become an officer of the Air Defense Forces. I studied in a polytechnical institute, and I hardened myself physically. I received a diploma and, at the military registration and enlistment office, I said: 'I want to become a regular officer.'"

Right now my father says in letters to me that he is glad: "Keep on, Yuriy, keep the officer dynasty of the Lavrins going!"

Listening to Yuriy, I thought about the continuity of generations of air defense servicemen. I recalled photographs that I had seen in museums of military glory of this guards regiment. They show Moscow's frontline sky, where the unit began its glory. Barrage balloons are floating, looking for targets, searchlight beams are criss-crossing....And, it seemed, you hear the staccato knocking of the antiaircraft guns, the howling of the engines of red-starred fighters departing for an encounter with the enemy. Back then, during the Great Patriotic War, our Air Defense Forces gained experience in protecting the native land's aerial borders.

And today these borders are inaccessible to the enemy. By day and by night, at any altitude and in any weather, radar stations detect him and determine his coordinates and direction of movement. And then antiaircraft missiles are aimed to meet the enemy. And the guards antiaircraft-missile regiment of Gds

Lt Col Valeriy Nechayev answer for the protection of the country's aerial borders. The servicemen of this and of all other air defense units understand their military duty to the motherland just as deeply as their fathers and grandfathers understood it during the Great Patriotic War.

#### Moscow Air Defense District

Moscow MOSKOVSKAYA PRAVDA in Russian 10 Apr 83 p 2

[Article by Lt Gen of Avn V. Ponomarev, member of the Military Council and Chief of the Political Administration of the Order of Lenin Moscow Air Defense District: "Those Who Guard the Sky"]

[Text] Soldiers of the Order of Lenin Moscow Air Defense District are at the radar station scopes, in the cabins of antiaircraft-missile complexes and at command posts, airfields and firing positions at all times of the day and night, vigilantly performing their difficult duty and reliably protecting the capital's peaceful sky.

Air Defense Forces troops are in constant combat readiness. This is their essence, their calling. This requires of the personnel of chasti [units] and subunits exceptionally strong discipline, a high state of organization and maximum mobilization of inner and physical powers. There is every basis for stating that in an era of a sharply aggravated international situation and activation of imperialism's aggressive forces, the sentinels of the capital's skies are demonstrating a readiness to answer decisively and skillfully the aggressor's raids. The district's soldiers master modern weaponry excellently: they show high moral, political and psychological qualities at combat posts during tactical exercises. The missilemen, aviators and communicators--servicemen of all specialties--carry out their sacred constitutional duty: to reliably protect the socialist motherland, and to be in constant combat readiness.

The glorious history of the native district and its unfading traditions are inspiring successes in the military work of the defenders of Moscow's skies. The soldiers know that V. I. Lenin attributed great importance to the country's air defenses. At his initiative the Putilovskiy Steel Artillery Antiaircraft Division, which became the first subdivision of the Air Defense of the Republic of the Soviets, was created. With it was begun the biography of one of the district's best units--the Guards Antiaircraft-Missile Putilovskoy-Kirovskiy Order of Lenin Air-Defense Regiment. The division opened its combat record in March 1918 in battles at Pskov. By April 1918 the Red Army already had about 200 antiaircraft artillery batteries and 12 fighter aviation detachments.

The Moscow Air Defense Zone was created to defend the capital and the Moscow industrial area. With the start of the Great Patriotic War, the capital's skies were guarded by servicemen of the 1st Air Defense Corps and the 6th Fighter Aviation Corps. They received their baptism of fire on the night of 22 July 1941, when the enemy made his first large-scale raid on Moscow, in which more than 200 airplanes took part.

On encountering a group of aerial pirates, Capt K. Titenkov, who later became a Hero of the Soviet Union as a result, attacked and shot down the lead aircraft, and Communist Sr Lt P. Yermeyev destroyed an enemy bomber.

The antiaircraft gunners, searchlight operators, balloonists and air-warning operators proved themselves to be courageous warriors. The subordinates of Sr Lt I. Klets and Lt A. Turukalo destroyed two airplanes each. At the approaches to the capital, troops of the 732d Antiaircraft Artillery Regiment, who not only repulsed air raids successfully but also disabled 23 enemy tanks, displayed great courage. In all, in the battles for Moscow, air-defense soldiers destroyed 1,300 Fascist airplanes.

The feats of the defenders of the capital's skies have gone into the golden pages of our district's history. These feats have inspired and are inspiring the sentries of the skies of the hero city of Moscow to serve and train successfully and to perform combat duties vigilantly in peacetime. A powerful source of inspiration for their military labor is the constant concern of the Communist Party that the personnel be provided with all that is necessary for the model fulfillment of the tasks that they face. Nowadays the troops are supplied with the newest armament, which is intended for timely detection and destruction of means of aerial attack. Antiaircraft missile units form the basis of air-defense fire power. The armament that they have enables the destruction of targets over a large range of altitudes and speeds and at great distances from the facilities being defended, regardless of the weather and time of day.

The most mobile branch of the forces is missile-armed air-defense aviation, which is intended for repulsing air attacks at distant approaches to the facilities being protected. Aviation units are equipped with supersonic all-weather fighter interceptors with powerful and accurate missile armament and radar equipment.

Radar units and subunits search continuously for air attackers and present information about them to the missilemen and the aviators. Electronic equipment and automated systems, which permit the combat capabilities of the troops to be used more fully and optimal decisions to be adopted during modern dynamic air defense combat, are being used widely in all air-defense control units.

But no matter how perfected the combat equipment is, however great its capabilities, the main force is the personnel who master combat skills. They are our pride. Our commanders, political workers and party and Komsomol organizations are concerned about them. The soldiers' skills and their unshatterable moral spirit, strongly alloyed with the highly technical equipment that has been made available, make up the combat potential of each unit and of the district as a whole.

The collective of missilemen in which officer Ye. Petrov serves, for instance, is famous for a good state of affairs. Most of the officers, warrant officers, sergeants and soldiers of this regiment are rated excellent in combat and political training and are specialists with high class ratings. The regiment has been awarded the USSR Ministry of Defense pennant, "For Courage and



Military Valor," and the challenge Red Banner of the district's military council for continuing successes for several years of service in a row. The missilemen were awarded the challenge Red Banner of the CPSU MGK [Moscow City Office] of Mossovet [Moscow City Soviet] Ispolkom.

Also, collectives under communist officers G. Gogolev, V. Zhdanov, N. Naydenkov, V. Soynikov and other leading officers, whose selfless labor has been recognized with high state awards, have achieved great successes in combat and political readiness. High achievements by the personnel subordinate to them is the fruit of the commanders' talent, the result of the tireless, enormous work done by officers of staffs and political sections, by deputy commanders for political affairs, and by party and Komsomol organizations, which required no little patience and tact. The whole of their multifaceted daily activity has been directed toward using advanced methods of training and indoctrination and toward shaping the personality of the servicemen—for courageous and skillful defense of the motherland. The purposeful party and political work, which has covered all aspects of the life of the personnel, has been of much help here. The communists, by virtue of their truthful words and personal example, have influenced the soldiers to work in the way required by the decisions of the 26th CPSU Party Congress and the November 1982 CPSU Central Committee Plenum and the instructions of CPSU Central Committee General Secretary Comrade Yu. V. Andropov. And wherever you find the troops—at airfields at their airplanes, or at missile-launch installations, or behind the scopes of radar stations or at consoles of automated systems—they spare no effort to perfect their skills. A good means for mobilizing them for shock military work is socialist competition, which has been going on under the motto, "Increase vigilance and provide reliably for the motherland's security."

The selfless labor of the Muscovites, who are responsible for a number of remarkable initiatives, are imparting a special fervor to the drive to fulfill socialist commitments undertaken by the troops. The patriotic movement of the capital's workers under the motto, "Honor and glory—according to the work," and their persistent struggle to strengthen discipline and social order have stimulated a great response on the part of each soldier. In accordance with the example of the Muscovites, who are struggling to turn Moscow into a model communist city, the district's soldiers are competing for model military camps and posts. Under the leadership of the communists, they are strengthening sponsorship ties with the collectives of enterprises, vuzes, schools and cultural institutions.

The soldiers of our air-defense district, which has been decorated with orders, are greeting the nationwide holiday of National Air Defense Forces Day with high achievements in service and in combat and political training, and, that means, with good morale. The district's soldiers are deeply conscious of the responsibility vested in them and they are proud of the confidence placed in them. They subordinate their thoughts and their affairs to being always on the alert and to reliably protecting Moscow's native skies.

## Air Defense Today Portrayed

Moscow SOVETSKIY PATRIOT in Russian 10 Apr 83 p 1

[Article by Lt Gen Avn I. Mal'tsev: "Sentries of the Motherland's Aerial Borders"]

[Text] Today is Air Defense Forces Day. On this traditional holiday, the Soviet people and the USSR Armed Forces honor the glorious defenders of our motherland's aerial borders, paying respect to their courage and heroism, which were displayed during the Great Patriotic War and are being displayed in peacetime.

The combat path of the Air Defense Forces has been linked continuously with the history of our socialist state and with the history and development of the Soviet Armed Forces. At the end of 1917 the workers of the Putilovskiy plant, at the personal instruction of V. I. Lenin, created an antiaircraft armored train, which was named the Putilovskiy Steel Artillery Division. This was the first subunit of the air defense of the young Soviet state. And already by September 1918 the Red Army had about 200 antiaircraft batteries and 12 fighter-aviation detachments. Antiaircraft gunners and fighter pilots carried out with honor their duty to defend the young Republic of the Soviets.

Successes in building socialism and in enlarging our country's industrial, scientific and technical base provided for the most rapid development of air defense forces before the Great Patriotic War. Suffice it to say that just from 1937 to June 1941 air defense personnel manning increased 6-fold.

From the first minutes of the Great Patriotic War, air defense chasti [units] and subunits did battle with enemy aviation. Our pilots, with the greatest courage and bravery, without sparing life, opposed the enemy, which had numerical superiority.

On the first day of the war, pilots of the 123d Fighter Aviation Regiment, under the command of Maj B. Surin, shot down 30 Fascist airplanes over Brest.

The antiaircraft gunners also fought bitterly. They not only fired at aircraft but also beat off tank and infantry attacks.

The air defense of Moscow is a special page in the combat annals of the Air Defense Forces. It proved to be unconquerable for Hitlerite aviation. After having set the goal of wiping our motherland's capital off the face of the earth, the Fascists from June to December 1941 alone mounted 122 air attacks, in which more than 8,000 planes participated. But the fighters' air-defense units and subunits protected Moscow from strikes from the air and enabled continuous operation of industrial enterprises and a normal life for the city. In so doing, 1,300 enemy airplanes were destroyed.

By destroying more than 7,300 Fascist airplanes during the war, the Air Defense Forces made a substantial contribution to the struggle for air supremacy. But the chief result of their combat actions was that they successfully solved



the problem of providing for troops on the field of battle and of preserving from destruction by Fascist aviation many cities, industrial enterprises, and railroad lines which supported the continuity of supply for the front with everything necessary, and they helped to maintain high morale among the population.

The motherland assessed highly the feats of the Air Defense Forces during the Great Patriotic War. More than 80,000 of them were awarded orders and medals, the title Hero of the Soviet Union was conferred on 92, and fighterpilot A. Karpov was awarded the Gold Star Hero twice.

But the imperialists are not putting the lessons of history to advantage. Blinded by a pathological hatred for communism, they are feverishly preparing anew for a "crusade" against the Soviet Union and collaborating socialist countries. And again, their plans for surprise unleashing of war assign a leading place to resources for air attack—to aircraft, to cruise missiles based upon sea and land, and to missile weaponry for various purposes. But now the destructive might of this weaponry has increased severalfold, flight ranges and speeds have increased substantially, and precision in inflicting blows has been raised.

Because of this, in the modern era, the role and importance of air defense as one of the components of our country's defensive capabilities have grown immeasurably, and high vigilance and constant combat readiness have become a law of life for our troops.

Combat duty, which even in peacetime is the fulfillment of a combat mission, occupies an important place in combat readiness. Our soldiers know well the enemy's craftiness and treachery and therefore are ready any minute to do battle with an aerial opponent if he makes a surprise attack and to crush him. For this purpose, the Air Defense Forces have perfected combat equipment at their disposal today. In our troops' armament are modern anti-aircraft-missile complexes that can destroy aerial targets day and night, in any weather, at various ranges and altitudes, and with high precision. Air-defense aviation is armed with all-weather supersonic missile-carrying fighter-interceptors.

The radar troops have powerful radar stations that can detect an aerial enemy at great distances. For purposes of controlling troops and weaponry, automated systems have been created that enable commanders and staffs to solve the most complicated tasks of modern air defense battle in the shortest possible times.

The complexity of the combat equipment of modern air-defense forces and the necessity for mastering it rapidly and for maintaining it in constant combat readiness make high demands on the general education and technical training of personnel. And the youth who augment our troops meet these requirements completely: 93 percent of the young soldiers who come to us have finished intermediate school, a tekhnikum or an institute.

DOSAAF organizations play a major role in training troops for service with the Air Defense Forces. Right now more than a third of our sergeants and soldiers

are young people who have mastered in these organizations the basics of their military specialty. The political and ideological hardening and good technical training that they received in DOSAAF organizations will help the young replacement to quickly adapt himself to the army environment and to master complicated combat equipment in the shortest time possible.

In attributing great importance to constant businesslike ties with DOSAAF organizations, command, political sections, and party and Komsomol organizations of our units, soyedineniya [large units] and military-training institutions are taking an active part in the military and patriotic indoctrination of youth.

The remarkable officer corps comprises the basis of our troops. It is their persistent everyday labor that provides for high combat readiness of troops and the instruction and indoctrination of personnel.

The work of the Air Defense Forces is not easy. Their weekdays are spent in the performance of regular duty and strenuous combat training, which includes exercises and classes based upon combat equipment and simulators, and in training drills and studies. Combat firings on the range, where the skills of missilemen and pilots are finally sharpened in an environment that approaches the combat situation to the maximum, are the consummation of combat training.

Fulfillment of the combat mission in fleeting and dynamic modern air-defense battle requires of our soldiers not only professional skills but also good physical and psychological tempering, high moral and political qualities, and strong military discipline. All party and political work is aimed at inculcating these qualities. Commanders, political organs and party organizations persistently improve the training and indoctrination process, raise its quality and effectiveness and concentrate their efforts on inculcating in the soldiers maximum devotion to the affairs of communism and their socialist motherland, and on indoctrinating personnel in the spirit of Soviet patriotism and internationalism.

The focus of this work is deep study, clarification and implementation of our party's policy, the historic decisions of the 26th CPSU Congress, and the principles and conclusions contained in the papers of the November 1982 CPSU Central Committee Plenum. Taking into consideration the sharpening of the international situation and imperialism's buildup of the military threat, we are taking steps to mobilize Air Defense Forces personnel for a further increase in vigilance and combat readiness.

Enthusiastically supporting and approving the domestic and foreign policy of the Communist Party and the Soviet Government, our soldiers are sparing no efforts and labor to enable the Air Defense Forces' readiness to meet high modern demands.

The Air Defense Forces stand today as reliable sentinels of the motherland's aerial borders, protecting the peaceful work of the Soviet people. They are always ready to carry out the combat mission in a united front with the troops of other branches of the Armed Forces at the country's call.

## Remote Missile Site

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 10 Apr 83 p 4

[Article by A. Petrenko (the N-th chast' [unit]): "At a Far-Off 'Point'"]

[Text] The small, underpowered service boat, which was so out-of-place here in the severe and menacing environment of the North, managed to head into a series of frothy waves. The iron prow sank into them, and then the wet, shining bow gaily and triumphantly leaped above them. This valiant little boat, as my fellow traveler--Komsomol worker Capt Anatoliy Lutsenko--promised, should be the last of many modern-day "courier horses" that I had ridden to reach the "point," which was lost in the limitless vastnesses of the tundra. Preceding it had been a fast train, a still faster airplane, and a sharp army all-terrain vehicle.

At the entry-control post, where the maritime border guards for the third time this day checked my papers, a green army UAZ [car made by the Ul'yanovsk Motor-Vehicle Plant] was waiting for us. It moved sharply from where it had been parked and began to tear along the road, which had been beaten in the deep snow, rising ever higher and higher, where, speaking army language, radar stations were visible on the height which dominated the locality.

We finally arrived. Directly in front of me was a long building. Its appearance was so characteristic that a special fantasy for determining its ownership was not necessary--it was a barracks. Beyond the barracks was a warehouse. In front of the barracks were lights for an unknown purpose. One was burning, although the arctic night had become much lighter.

The staircase that goes up to the top of the hill, to the radars, is impressive. Can it be that the radar operators ascend it to go there? And if there is a snowstorm? Yes....

The young soldier Tolya Zabolonkov confessed that he often had the very same dream. It is as if he wants to rush, to jump out of the cabin, from smoke that is in the corners. But his quilted body does not obey. With terror he feels the puffs of smoke envelop him, getting into his nose and his throat.... At that moment he always recalls: he has his gas mask on! And right away he becomes calm, and, putting his hands on the control panel in the accustomed manner, takes in at a glance the whitish spots spread here and there on the indicator. How many of them are there?

His heart is overwhelmed with gladness. For he himself, without outside help, "conducts" this assemblage of sliding blips, each of which represents an airplane. The airplane is his personal enemy.

One of the points begins to grow rapidly, filling the whole screen. This is a signal: it is he, the main enemy. The rest are only concealing and supporting the flight.

The image is smudged and a washed-out strip appears. It doesn't matter. Today, even a novice who has gotten lazy knows that this is passive interference



and he knows how to tune it out. You think, they are throwing out some kind of metallized strip. He presses the required button.

"I see the target!" But the screen suddenly floods with white, milky light. "He has shifted to active interference--his transmitter has tuned to my frequency." Without looking, he flicks the required toggle switches. The airplanes again become clearly visible.

And here the crackle of automatic-weapon and machinegun bursts are buried in the consciousness. "They are attacking me, they are protecting me," he smiles, experiencing pride from consciousness of the importance of his specialty, without which neither the antiaircraft missilemen nor the interceptor pilots will easily detect an aerial target. He is their sharp-sighted, all-seeing eyes. He is the first to begin the duel. He is also the winner!

For Pvt Zabolonkov this was just a dream. But there actually was such a "battle." With only one correction. Another radio operator--Grigoriy Tatevosyan--had conducted it. He sat wearing a gas mask, while a charge representing an enemy OV [toxic agent] was smoking. He tuned out all possible kinds of interference. At the "point" this drill became a classic. Newcomers were told about it from nearly the first practice, and they studied it to the last comma. In order to teach a skillful personal touch.

The time when a soldier had only to carry out the command, "A higher step--a wider stride," or "Bayonet--thrust!" is gone irrevocably. One of the best specialists at the "point" is Pfc Aleksandr Khartskhayev, an RLS [radar] operator. His friends and others from the same part of the country were not even close to being admitted to this specialty--they had had some "fairs" on their secondary-school certificates. Knowledge and skill are being brought increasingly to the forefront in the military service.

"How is it in the army?" Grigoriy Tatevosyan muses. "If you know, you are praised. If a friend knows--they praise him. If you do not know, you are scolded, but also the friend because he did not help."

Here it is in brief--mutual assistance, mutual gain. The army cannot get along without it. Especially at such far-off "points," where, they joke, a year has 12 months of winter and the rest is summer."

In saying good-bye, I posed a last question: "And what are they for?" as I pointed to the lights in front of the barracks that were burning with maximum intensity.

It happens that things get so covered up or such a heavy fog descends that one can get lost in a short time. And so these serve as beacon lights.

Yes, the North does not pamper people. But they survive. They are accustomed to its severity and to its beauties and its surprises....For guests here everything is exotic, for them--these are the conditions of life and the service.



## Air Defense Forces Lauded

Moscow SEL'SKAYA ZHIZN' in Russian 10 Apr 83 p 4

[Article by Lt Gen S. F. Romanov, chief of the Main Staff of the Air Defense Forces and Hero of the Soviet Union: "Sentinels of the Sky"]

[Text] Soldiers of the Air Defense Forces live with the same interests and thoughts as all Soviet people. They vigilantly stand guard on our motherland's aerial borders, together with the other branches of the USSR Armed Forces, reliably protecting the peaceful labor of the Soviet people and carrying out worthily their patriotic and international duties to defend socialism's achievements.

The Air Defense Forces have a glorious and rich history, the birth and development of which are associated continuously with the name of Vladimir Il'ich Lenin and with the activity of the Communist Party. Created in the first days after the Great October victory in the form of separate antiaircraft subunits, they have grown into a powerful branch of the Armed Forces, which has already proved itself during the Civil War and the War of Intervention, successfully repelling enemy air raids at Petrograd, Moscow, Tula, Baku and other important centers of the country.

The merits of the air defense soldiers were especially great during the Great Patriotic War, when they had to wage battle not only in the air but also against tanks and actual enemy personnel. The troops displayed high firmness at the approaches to Moscow and during the siege of Leningrad, at Stalingrad and at the Kursk salient, at the Dnepr and in Belorussia, and during the liberation of many European states from the Fascist yoke.

In all, during the Great Patriotic War, the National Air Defense Forces destroyed more than 7,300 enemy airplanes, more than 1,000 tanks, about 1,500 guns and mortars, and much other combat equipment and enemy personnel. For their combat feats, more than 80,000 servicemen were awarded orders and medals, the title Hero of the Soviet Union was conferred on 92 of them, and this title was conferred twice on pilot A. Karpov. Twenty-nine soyedineniya [large units] and chasty [units] received the title "guards," 11 received honorary designations, and 34 soldier heroes have been entered forever on the rolls of military units.

Large and small units for the air defense of ground forces made a meaningful contribution to the Armed Forces' overall victory. In close mutual actions of the National Air Defense Forces and the fighter aviation of the air armies of the fronts, they also did everything possible for a most rapid victory over the enemy.

In the postwar years, the Air Defense Forces, like all the Armed Forces, have been raised qualitatively to a new plane of development. They have been equipped with effective modern combat equipment and armament, which embody the newest achievements of scientific and technical progress.

The antiaircraft missile troops, which are armed with missile complexes for destroying enemy targets over a broad range of altitudes and speeds, at great distances from the facilities being defended, regardless of weather and time of day, form the basis for the firepower of the Air Defense Forces. Missile-armed air-defense aviation has been equipped with supersonic all-weather interceptors, which have mighty armament and radar equipment, while radar troops are supplied modern radar complexes that enable the missions of radar search and support of the combat operations of the antiaircraft missile troops and fighter aviation to be performed successfully. Wide use of automated control systems and radars and high-speed communications equipment enable the troops' combat potential to be used more fully in the environment of transient, dynamic air-defense battle.

However modern the armament and combat equipment that the forces may be furnished, their main force consists of the remarkable Soviet soldiers, ideologically hardened and devoted to the maximum to the party and the people, who master completely the weaponry entrusted to them and are ready to carry out their duty to the end. People of high sophistication and strong will who love their profession serve in the Air Defense Forces. The generals and officers, as a rule, have higher military and military-specialty education. Units and subunits are commanded by highly rated specialists and masters of combat skills.

The political and professional training of the soldiers and sergeants has been raised to a new plane. Called to our forces are youths, 80 percent of whom have higher or secondary education, which enables them to master modern complicated combat equipment and armament within a short time. The binding force of the military collectives are the communists and Komsomol members, who comprise about 90 percent of the Air Defense Forces' manning.

Commanders, political workers and party and Komsomol organizations, using diverse forms of party and political work, are indoctrinating soldiers in the spirit of unlimited devotion to the motherland, the Communist party and the Soviet people, and readiness to carry out with honor their constitutional duty to the people and to reliably defend the native socialist land. Within our forces, as within the Armed Forces as a whole, this work is built upon the foundation of party congress decisions and the principles and conclusions contained in the speeches of CPSU Central Committee General Secretary Comrade Yu. V. Andropov.

The law of the Union of SSR's, "On the USSR State Border," charges the Air Defense Forces with the task of protecting the borders of the air space of our peaceful sky. The Air Defense Forces, being troops who are constantly combat ready and who carry out in peacetime a mission of state importance, constantly perform the combat duty of protecting our motherland's aerial borders. From the ice of the Arctic to the sands of the Karakumy, from the Baltic to the Pacific Ocean, the aerial border of the Soviet Union stretches out for 60,000 kilometers. This line, which is invisible but precise to the maximum, passes over mountain crests, dense taiga, swampy marshes, quicksands of the desert, and seas and oceans. Protecting the life and happiness of the Soviet people, Air Defense Forces soldiers, serving under difficult conditions, far from communities, carry out with honor their military duty to defend the

motherland's aerial border in any weather, day or night, as do sentries on their posts.

Many of our soldiers have been awarded state honors for heroism and selflessness and for successes in combat and political training in peacetime, and the title of Hero of the Soviet Union has been conferred on pilot Col I. Zhukov.

The socialist competition that is being promoted in the Air Defense Forces under the motto, "Increase vigilance and provide reliably for the motherland's security!" has been aimed at a further rise in combat readiness and vigilance. The initiator of the competition, personnel of the Guards Antiaircraft-Missile Smolensk Red Banner, Order of Suvorov, Order of Kutuzov and Order of Bogdan Khmel'nitskiy Air Defense Regiment, which Gds Lt Col V. Nechayev commands, is carrying out its commitments with honor.

The ranks of those who are excellent in training are multiplying in all units of the Air Defense Forces. The overwhelming majority of the troops achieved high goals for military work performed during past months of the winter training period. The number of masters of combat qualifications, of rated specialists, and of those who excel in combat and political readiness is growing. Among them are no few former rural workers. Candidate for CPSU membership Kh. Delagayev, prior to being called to the Air Defense Forces, worked as a shepherd at one of the kolkhozes of Stavropolskiy Kray. Right now he is a first-class aviation mechanic. Gds Pvt G. Luk'yanenko, driver-mechanic from the Kaydakovski Sovkhoz of Smolensk Oblast, has become a good missileman. Former agronomist of Sovkhoz Borinskiy of Lipetsk Oblast Pvt A. Cherkasov is mastering the specialty of military communicator with confidence. Those who are rated excellent and have specialist ratings serve as an example in training, service and discipline.

Along with carrying out the combat task, the sentinels of the motherland's skies are making what contribution they can to fulfill the Foodstuffs Program. Each year a certain portion of the military drivers labor selflessly in the country's fields, helping the rural workers to gather the harvest. Kitchen gardens, which supply the soldiers' dining halls with potatoes, fresh vegetables, meat and milk, are functioning successfully at many units of our forces.

The Soviet people can labor calmly and with confidence in the name of communism. The faithful sons of the people--soldiers of the Air Defense Forces--are showing high vigilance, are improving their military skills and combat readiness continuously, and are reliably protecting our motherland's air frontiers. They have been true to Lenin's behests about defense of the socialist motherland and are in constant readiness to give a shattering rebuff to any aggressor.



## Missile Launchers in Mountains

Moscow TRUD in Russian 10 Apr 83 p 2

[Article by Yu. Dmitriyev (Transcaucasus Military District) and commentary by the Deputy CINC Air Defense Forces Col Gen Arty A. G. Smirnov: "Lightning in the Mountains"]

[Text] Deputy Commander in Chief of Air Defense Forces  
Lt Gen Arty A. G. Smirnov comments on reporting from the  
launch sites of antiaircraft-missile complexes.

### The Correspondent's Story

This is always a solemn and stirring moment. A precise formation of soldiers, with the sounds of a band on the parade ground. The banner of the 'chast' [unit] is being brought out, and in the guarded silence the commander's order is sounded: "For combat duty to protect the borders of our motherland—the Union of Soviet Socialist Republics—take your posts!" From this moment on, the soldiers of the subunit are called upon to carry out a task of special state importance—to watch vigilantly over the aerial situation and to be prepared to repulse any surprise enemy attack. For the dark-green staff UAZ [car made by the Ulyanovsk Motor-Vehicle Plant] had delivered us to one of the mountainous regions where soldiers of one of the Air Defense Forces' subunits are performing their service.

Among the silent mountain spurs, a small encampment was suddenly revealed. On a stony patch are buildings painted the color of the locality, the radar station's antennas are rotating on an eminence, and there is a row of vans covered by dark-green camouflage netting that serve as equipment cabins for the missile-control station. There is a metal door. A guard. We ascend the rungs to the cabin. Before us is a room with soft dull lighting and with a multitude of instruments, scopes, lighted diagrams and tables, and plotting boards. These are, if it can be said, the brain and nerves of the subunit.

Right now command-post specialists are running a practice. Quite young soldiers and dashing sergeants analyze precisely and quickly the data obtained over the radar's high-speed communications lines, they track aerial targets and report on them to the current-operations personnel on duty. Today Capt Igor' Kazanets, a thoughtful, energetic officer, with an Emblem of the Higher Command Military School on his uniform, is meeting this important responsibility. Sr Lt Pyatras Yangauskas will help him. They talk about the peculiarities of their service:

"Just like 'ground' border guards, we are required to make timely detection of the enemy and to track him with the newest, extremely sensitive electronic instruments in order to get the flight parameters of the border 'viola-tor.' And quickly, preferably at maximum range, provide for his destruction. When it is considered that modern air-attack vehicles have speeds of up to 3,000 kilometers per hour and fly at altitudes of several tens of meters to tens of kilometers, one can imagine why it is difficult at times to do this.



It is not by chance that after each training 'battle,' the soldiers' blouses are damp and their eyes dazzled by the flashes on the screen."

...The one who is older recalls the wartime sky: enemy vultures are overhead, above one's native home town or village. And the brilliant flame of our antiaircraft guns, with long barrels pointed upward. The heiresses of those glorious guns, mounted on rubber-tired wheels, which warded off disaster for us, now rest upon powerful crawler vehicles that are armored and are high in speed. We saw one of these self-propelled launch installations in an entrenchment. Two cigar-shaped antiaircraft guided missiles were ready for launch. The commander of the installation, Sergey Degtyarev, introduced his subordinates: Pvt Hurzallo Myrzashev and Pfc Bolotbek Tilebaldiyev. These were the best specialists in the unit, who had achieved excellent results in servicing equipment.

Sergey Degtyarev completed the Orenburg Higher Antiaircraft-Missile Command School 4 years ago. The military professions had attracted him back during his boyhood years. And he devoted himself to it entirely. And his fellows here had not even thought, had not dreamed, about service in the mountains or about work with such a terrible missile. Kazakh N. Myrzashev, who came from Uralsk, had worked as a tractor driver at a big sovkhoz on the steppe. He grew wheat. His fellow-worker, Kirghiz B. Tilebaldiyev, had studied hydraulic engineering in his native Naryn. There were still eight brothers and sisters in the family. And both of them had received new specialties in the army.

They love their commander, and their self-propelled missile vehicle. The day before, at 0300 hours, they had brought it, after a difficult trip, into the mountains, to this position. But in the morning, when we got acquainted with the crew, the machine was already bright in its cleanliness.

At the signal for a training alert, the lads, under the leadership of the commander, rushed to the half-opened side hatch here and disappeared into it, taking up their assigned places. In mere seconds they had taken a look at the instruments, started the motors and checked the readiness of the mechanisms and the missiles. And now Pvt Myrzashev's precise report was heard at the command post:

"The first is ready for launch!"

"The second is ready!"

The missiles quivered, rose slightly from their metal guides, and were aimed at the sky. But before they rush upwards, like lightning, all the necessary calculations are performed at the neighboring station for guidance of the missile. Information about the targets that are approaching the defended facility now come onto the indicator of this station. The targets were coming from various directions, singly and in groups, with great speed.

The chief of the missile guidance station, Capt Grigoriy Kosolapov, is conducting an exercise for operators Sgt Aleksandr Lenin and Pfc Yuriy Prygunov. They are wearing light black coveralls, tanker' helmets with head

phones. The station's power plant hums. All the indicators are turned on. However, even the target is not defenseless before the radar—it emits intense radio interference, which makes searching for it difficult. A most severe "ground-air" duel is begun. Who will forestall whom?

Capt Kosolapov, who completed the Poltava Higher Antiaircraft Missile Command School brilliantly in 1977, has no little experience behind him. We watched him. The captain was surprisingly quiet during these minutes of short-lived skirmishing. He was precise in every movement. And, it seemed to us, he was absolutely confident in the outcome of the "battle." In the station's cabin were five red stars. They indicate how many excellent sharpshooting combat launches have been made on the target range. It is evident that the young officer had absorbed the best warrior qualities of his father—a frontline reconnoiterer, Viktor Mikhaylovich Kosolapov, knight of several combat orders, who trod the path from Stalingrad to Koenigsberg. Before becoming an officer, Sgt Sasha Lenin had been a rural driver from Gorkiy Oblast. He has a sharp eye and skillful hands.

A bright green spot flashes on the screen. It is moving swiftly. Right now each second is dear. The target must be tightly "held," it must not be allowed to tear away from the tenacious "embrace" of the radiowave.

"I am tracking the target," the sergeant reports to the commanders. "Its coordinates are...range...azimuth...."

Not one excess word or motion, no kind of nervousness. The report, we repeat, takes seconds. If there is a weakening for an instant, vigilance is lost, and the high-speed, highly maneuverable target is gone. And this means destruction....

At the target range Capt Kosolapov's and Sr Lt Degtyarev's subordinates had guided the automated missile complex in skillful fashion. The red button was pressed! Launch! A roar and flame above the target range. Leaving a whitish contrail, the missile went swiftly to the radio-controlled target. Once more, somewhere far off, there was a rumble. Burning fragments flew to the ground—all that was left of the "violation." Victory!...People jumped out of the cabins, hugged each other and threw their helmets into the air. And the silent firing range's smooth surface becomes a witness to this soldierly celebration.

#### The Commander Comments

"You have told in this reporting about just a few episodes from the daily combat of our soldiers," says Deputy Commander-in-Chief of the Air Defense Forces Col Gen Arty A. G. Smirnov. "And if one travels about the whole USSR State Border, which comes to more than 60,000 kilometers, beginning with the shores of the Pacific Ocean, from Arctic regions to the Pamirs and the desert of Central Asia, and to our western borders, we encounter the patrollers of the Soviet sky everywhere. Their chief motto is—high vigilance and constant combat readiness. They are called upon to protect reliably the Soviet people,

our cities and villages, and troop groups from enemy air strikes, and to provide for the inviolability of our air borders.

"This task is extremely important. It is known that imperialism's aggressive forces are striving in every way possible to develop their aerial attack resources and to place them in direct proximity to the borders of the USSR and of our allies. And something else is known—the short approach time of aerial targets and the stress of combat operations. Therefore, we should always be on the alert.

"Our forces have rich and glorious battle traditions. During the last war, air defense soyedineniye [large units] and other units destroyed more than 7,300 enemy aircraft, 1,000 tanks and 1,500 guns and mortars. More than once they have repulsed the impudent attempts of the imperialists to encroach upon the air space of the air defense soldiers, even in postwar times.

"Thanks to the concerns of the Soviet people and the Communist Party, the Air Defense Forces have now been equipped with powerful and diverse equipment that meets the high requirements that ensue from the nature of modern war. Anti-aircraft missile complexes, supersonic all-weather fighter-interceptors, and radar stations—all these resources enable the timely detection, the steady tracking and the destruction of any aerial targets, regardless of speed or altitude of their flight or the weather.

"Formidable weapons are in the hands of our patriot soldiers, who are ideologically hardened and devoted to the Leninist party and the Soviet motherland. The protectors of our country's aerial borders guarantee their constant combat readiness, and they are always ready to carry out any task."

#### Air Defense Chief Writes

Moscow SOVETSKOY VOIN in Russian No 7, Apr 83 pp 1-3

[Article by Commander-in-Chief of the Air Defense Forces, Deputy USSR Ministry of Defense and Twice Hero of the Soviet Union Mar Avn A. I. Koldunov: "The Native Land's Aerial Shield"]

[Text] The progress unprecedented in history, the leap from centuries-old backwardness toward the summits of economic and cultural development which the fraternal peoples of the Soviet Union have performed under the leadership of the Communist Party in a historically brief period delights and inspires all upright peoples of the world.

Our successes in building communism are proving convincingly the irresistible power of the most advanced social and political order in the world, which developed socialism is. At the same time they are provoking fierce anger on the part of our enemy—the imperialists. The forming of the mighty collaboration of the East European countries, which rose up on the path of socialist development as a result of the crushing defeat of Fascism in World War II, has sharpened class contradictions to the maximum and have brought them to a global scale. In rejecting the idea of the peaceful coexistence of two opposing

politico-social structures on the planet, the imperialists have taken up the criminal path of preparing for a new world war.

"...The present-day policy of Washington aggravates the international situation to extremely dangerous limits," CPSU Central Committee General Secretary Comrade Yu. V. Andropov noted in his speech at a ceremonial meeting that was dedicated to the 60th anniversary of the forming of the USSR. It, this policy, is expressed in the announcement of the American president of a new "crusade" against communism, in the adoption of aggressive doctrines of inflicting a concentrated first nuclear strike on facilities of the Soviet country and its friends, of conducting "limited" and "protracted" nuclear wars, of sabotaging constructive negotiations for stopping the arms race, and of developing and producing ever newer destructive means for conducting modern war.

The aggressors are gambling decisively on their nuclear-missile might, the wide-scale surprise use of it from surface bases and from the expanses of airspace and the oceans. They are also feverishly militarizing space.

Today a multitude of combat surface ships, submarines and modern high-speed bombers with nuclear weaponry on board, operating in shifts, are day and night plowing the World Ocean and the world's airspace, ready to direct their death-dealing loads at our peaceful cities and economic facilities. The newest surface strategic missile complexes with individually targeted thermonuclear warheads stand in round-the-clock readiness for a quick launch. All this is cold-bloodedly aimed at the very heart of the peaceloving Soviet people and their friends.

As CPSU Central Committee Politburo Member and USSR Minister of Defense MSU D. F. Ustinov emphasized, "it would be a great mistake to ignore the fact that the imperialist countries possess today enormous economic and military potential and power and armed forces that are well trained and equipped with modern weaponry. The threat of war, the threat of aggression from them is the severe reality of our day. It requires of us doubled, tripled vigilance and tireless daily work to strengthen the country's defenses and to increase the combat might and combat readiness of our Armed Forces."

For air defense servicemen, this is not only the very first precept, but also the primary combat mission. It is said completely correctly about our troops that in peacetime they operate as if at war. Each day the duty crews, after the ceremonial ritual of guard mounting, take up their combat posts. Prior to the actual shift itself, they are in a state of tension and maximum vigilance. The rhythm of the combat work is maintained with precision and purpose during the duty shifts. Every bit of the motherland's aerial space is probed by radar beams. The silvery bodies of anti-aircraft missiles at the launch installations are stiff in quick readiness. Pilots at airfields await commands. They are all ready, on the first signal, to rain down their force on any aggressor if he dares to disturb the peaceful creative labor of our people and to invade the air frontiers of the Soviet native land.

The Communist Party has always given and always will give enormous importance to development of the Air Defense Forces. We note with great pride that their



glorious heroic history and revolutionary and combat traditions coincide with the birth of the Republic of the Soviets and are organically linked with the name of Vladimir Il'ich Lenin.

The continuously growing successes in development of the socialist economy and of culture and of scientific and technical progress in our country have enabled the Soviet Armed Forces, including the Air Defense Forces, to be transformed qualitatively. They are being developed to take into account the experience of the last war and recent achievements and prospects for the development of modern military science and technology.

The antiaircraft missile troops stand vigilantly on guard over our own sky. They possess great firepower and, in mutual operations with fighter aviation, reliably provide for our motherland's air defense. The diverse types of anti-aircraft missile complexes possess high capabilities for defeating modern means of air attack over the entire range of flight altitudes and speeds, in any weather, day and night

The most maneuverable arm of the services--air-defense aviation--performs the mission of destroying air attack forces, mainly at the distant approaches to the facilities being protected. It includes supersonic all-weather fighter-interceptors with powerful missile weaponry. They are capable of intercepting and destroying aerial targets at various altitudes, regardless of the weather or time of day.

The radar troops conduct continuous radar search for the enemy's air attack forces and support the combat operations of the antiaircraft missile forces and of interceptor aviation.

The Communist Party and the Soviet people regularly supply air-defense troops with modern weaponry and combat equipment. Automated systems for control and high-speed communications equipment are being introduced widely and used skillfully. They enable commanders and staffs to solve more effectively and in the shortest possible periods problems of the struggle with the powerful, perfidious enemy, who is well equipped technically.

All these modern resources have been entrusted to highly idealistic, creative and competent patriot soldiers, who are distinguished by unsurpassed combat-morale qualities and by dedication to the party and the people and to the ideals of communism. By their deeds they have multiplied the traditions that reflect the specifics of the Air Defense Forces combat activity: they increase their combat readiness, they strengthen vigilance and firmness in the performance of combat duty, they skillfully assimilate complicated combat equipment, and they improve their ability to defeat the aerial enemy, whatever surprises he may present and however craftily he may act or whatever evasive action he may take.

Numerous examples of recent years, when Soviet soldiers operated with the highest degree of competence and heroism under exceptionally complicated situations, testify graphically to this. And thanks to this they have emerged as winners in performing their duty and in solving tasks that arise suddenly.

I would like to refer to an episode that occurred during combat-training missile launches at a target range.

The aerial situation arising before Lt Col A. Malyarov and his subordinates proved difficult in the highest degree. A highly maneuverable low-flying target was expertly camouflaged and was using active interference. To some people it would have been elusive. The resolute, self-disciplined officer, who also knows well and skillfully uses automatic control system equipment successfully, was able to make the correct decision and to defeat the insidious air "enemy" with his first missile. His experience later helped many missilemen to raise their combat skill.

Every such victory is a result of daily intense combat and political readiness, combat and moral unity of the military collective, steady improvement of professional skill and strengthening of military discipline and regulation procedure. A feeling of collective and professional responsibility for high-quality combat readiness in all its parameters—it is these that make up the cornerstone on which all the life and training of the air defense forces are based today.

Advanced military collectives are competing for the skillful mastery of combat equipment, for insuring its stable operating reliability and for making optimal use of all its combat capabilities in any situation. For example, the subordinates of Lt Cols M. Grechishkin and V. Kravtsov, Capt N. Fedorenko and many others are marked by high achievements in this area. Here all specialists have the skill ratings required of them and have mastered allied specialties and excellently meet combat standards not only with full crews but also with reduced crews. A deep knowledge of the equipment and of its capabilities, the maintenance of it in model condition, and stable practical habits enable the soldiers to solve reliably complicated missions for the detection of air targets, for tracking them and for destroying them with the first missiles at maximum ranges during active counteraction and interference.

The patriot soldiers always are marked by consistency of word and deed. It is on this basis that chasti [units] and subunits have promoted socialist competition for the assimilation of modern equipment and weaponry under the slogan: "New combat equipment requires a high degree of mastery!" It is difficult to overestimate the importance of this patriotic initiative. To know one's weaponry and equipment excellently and to use it effectively on the field of battle means to provide oneself with the objective conditions for victory over a strong enemy who is well supplied with technical equipment. It should be emphasized that modern simulators are the key to the heart of modern electronics and cybernetics, which comprise the "brain stuffing" of various machines, mechanisms and control devices. They enable those conditions to be created for the objective monitoring of and methodological assistance to the troops in the study of their equipment that will make it possible to produce skilled specialists, people who are genuine experts in their combat specialty.

Lt Col V. Kovach, Maj G. Permaykov, Capt V. Lyuborets, Sr Lt V. Chuykov, WO D. Khmyz, Sgt A. Sharapov and many others, it turns out, are recognized

as masters of military affairs. What marks all the competition leaders? It is, first of all, dissatisfaction with what has been achieved, a search for new reserves for raising the effectiveness and quality of the military work and for ways to make personal improvements. It is, moreover, a readiness to share experience with comrades, to unselfishly transmit to them everything that will enrich them.

Not only individual experts of military affairs but also whole military collectives are moving to the forefront of the competitors. The right-flankers of the glorious affairs are those who initiated competition under the slogan, "Raise vigilance and support reliably the motherland's security!"—the collective of the Guards Antiaircraft-Missile Smolensk Red Banner, Order of Su- vorov, Order of Kutuzov and Order of Bogdan Khmel'nitskiy Air Defense Regiment, where the commander is Gds Lt Col V. Nechayev. Many collectives are learning from him that unity and a high state of organization are indispensable prerequisites to the fulfillment of high socialist commitments.

In speaking about further raising the combat readiness of air defense units and subunits, one of the main decisive prerequisites that should be specially emphasized is the necessity for military discipline in the highest degree. We have in mind not only its moral aspects. Today the discipline of all military work and its professional and "production essence" are acquiring an increasingly profound meaning. Because many highly skilled specialists operate the collective's weaponry jointly. Their precise interaction in accordance with the strict parameters of all the regulation is absolutely necessary. Mistakes or carelessness on the part of one of them can not only cost the whole collective dearly but can also ruin fulfillment of a most important combat mission.

This is why commanders, political workers and party and Komsomol organizations, in organizing combat and political training of troops, begin it all with application of the strictest regulation procedure, an increase in exactingness on the part of the chiefs, and indoctrination in thoroughness and in conscious personal responsibility on the part of all personnel, they themselves setting an example with uncompromising adherence to principle and with conscientiousness in the great and the small.

The main tasks of party and political work and of political and military indoctrination are solved in the companies and batteries—where the foundations for combat readiness and strong unity are first laid, where a healthy moral climate of the soldiers' collective is shaped. These major tasks have been solved successfully in many subunits. Thereby all the prerequisites for a good-quality increase in combat and political readiness have been created.

It is completely consistent that the majority of air defense servicemen will celebrate their holiday this year with high results in combat training and service. Deeply understanding their personal and collective responsibility to the party and the people for reliable defense of the native land's aerial borders, they are filled with resolve to carry out the missions assigned to them with honor and to completion. This is their constitutional duty, this what their hearts dictate.

COPYRIGHT: "Sovetskiy voyn", 1983

11409

CSO: 1801/262

## STRATEGIC ROCKET FORCES

### INTERVIEW WITH TOLUBKO CONCERNING WORLD WAR II, CURRENT WORLD SITUATION

Moscow LITERATURNAYA GAZETA in Russian 4 May 83 p 12

[Interview with Chief Marshal of Artillery V. F. Tolubko, USSR deputy minister of defense, commander-in-chief, Strategic Rocket Forces, by special correspondent Naum Mar: "Roads to Victory"]

[Text] On the eve of the 38th anniversary of the great victory of the Soviet people over Hitler's Germany, the editors of LITERATURNAYA GAZETA have asked chief marshal of artillery V. F. Tolubko to reply to some questions.

[Question] Vladimir Fedorovich, what can you tell us in connection with the approaching Victory Holiday?

[Answer] First I would like to note the great importance of this tremendous historical event in the life of the Soviet people and all mankind.

I served then in the 4th Guards Stalingrad Mechanized Corps, which gloriously made the combat journey from the banks of the Volga to Bulgaria and Yugoslavia, to the walls of Belgrade and Vienna. And of course I will never forget the days and nights of the victorious Spring of 1945.

It should be recalled that during the years of the Great Patriotic War some representatives of the Western world thought that the USSR could not withstand the onslaught of Hitler's Germany. There were also many other skeptics who thought that once the armored regiments of the raving fuhrer reached the Volga it meant that the war was over and the fate of our country was sealed. But these people did not know our Homeland! The entire people was mobilized under the leadership of the Communist Party. Each month we received more and more new arms. In 1941 the famous "Katyusha" multiple rocket launcher was tested, and the Army obtained the T-34, the world's best tank, which played an exceptionally great role in the victory over Fascist Germany.

This is why every honest man with full justification considers our victory over fascism to be great!

[Question] Where were you at the outset of the Great Patriotic War?



[Answer] On 5 May 1941 I finished the Red Army Academy of Mechanization and Motorization, and I, Senior Lieutenant Tolubko, was assigned as assistant chief of operations in the headquarters of the 21st Tank Division, which was then located on the Karelian Isthmus. Here I first encountered the Great Patriotic War and entered battle. In August of that year Colonel Kravtsov, the division chief of staff, became commander of a rifle division, and I was named to replace him.

The war gave birth to many heroes. There, of course, were also some in the units in which I served. Take, for example, Aleksandr Trofimov, chief of reconnaissance of our 21st Tank Division. During this time, the summer of 1941, he frequently went far into the fascist rear area and brought out "tongues" to the headquarters. He seized more than 20 Hitlerites, thus obtaining valuable intelligence. Once Trofimov even brought a fascist major, in whose map case unexpectedly turned up a situation map on the eve of Hitler's general offensive against Leningrad. This information was immediately transmitted to the headquarters of the 64th Army and Leningrad Front, where its value was assessed. Mikhail Mitrofanov, the fearless commander of the 42nd Tank Regiment, now living in Zhitomir Oblast, and tank battalion commander Zimin, now a doctor of military sciences, who went on reconnaissance missions with Trofimov were among the many such true heroes who compiled the glory of our division already in the difficult year of 1941, when the first stones of the edifice of the great victory were laid!

[Question] Which battle do you especially remember, Vladimir Fedorovich?

[Answer] That is not an easy question. There were many combat events. But just the same, the details of the battles for Belgrade, for the liberation of Yugoslavia, are especially memorable to me personally.

The Belgrade Operation is correctly considered to be one of the brilliant offensive operations of the 3d and 2d Ukrainian Fronts in the concluding period of World War II. It was and remains an excellent example of combat cooperation between the Soviet Army, the Peoples' Liberation Army of Yugoslavia, and the Bulgarian Peoples' Army. It is important to note that the combat operations of all three armies were united by a single operational concept, and that they employed excellent coordination in routing the German fascist forces.

From the area of the Bulgarian city of Vidino, located near the Yugoslav border, our corps was ordered to cross the border and attack on the Belgrade axis. A difficult and crucial task faced the corps. It was reinforced with many units and large units, including three air divisions which covered it from the air. So configured, the corps was a powerful mobile group of the 3d Ukrainian Front, capable of rapidly overcoming the mountain mass of eastern Serbia. Swiftly developing operational success in the enemy's rear, along with our other large units as well as the units of the Peoples' Liberation Army of Yugoslavia, it freed Belgrade from the fascists.

Mountains, a poorly developed road network, low capacity of old bridges, rains and fog all naturally complicated the successful conduct of the

operation (the overall depth of which was 250-300 kilometers), which was planned for 14-15 days. At that time our corps had 17,000 officers and men, 180 tanks and self-propelled artillery pieces, 324 guns and mortars, and 21 Katyushas.

The corps was commanded by Lieutenant General of Tank Troops Vladimir Ivanovich Zhdanov, a talented military leader and highly experienced tanker. I recall how we, along with the lead tank brigade, approached the outskirts of the Yugoslav city of Zagubitse. It was growing dark. It was raining. The general exited the "Willys" jeep, opened his map case and took out a map. He looked at it and asked me, the corps staff operations officer:

"If we are to believe the map, this is Zagubitse. Is that right, Comrade Tolubko?"

"Yes sir, Comrade General," I answered.

"But the enemy was here not long ago, and now I hear and see nothing of him."

"He was driven out an hour ago."

"Really? Outstanding! That means that things are going well. To cover 120 kilometers in a day under these difficult mountain conditions is not bad! Now we will halt for two hours, and despite the fact that it is night, get back on the road. Belgrade awaits us!"

The Hitlerites, understanding well the importance of the battle for the Yugoslav capital, seriously strengthened their defense. The high Avala Mountain lay directly before Belgrade and slightly to the south. The Germans created a strong defensive line on the mountain, and thus made it impossible for the corps to drive to the city from the march. It was necessary to seize Avala Mountain. Under these conditions I recommended that the artillery preparation begin at a time the enemy was not accustomed to—the onset of darkness. It was necessary to put all the tanks and all the guns on the forward edge, along with the large searchlights, and strike! After the artillery fire and a salvo on Avala Mountain from two Katyusha battalions, the searchlights were turned on. They blinded and stunned the enemy, and we immediately began the attack. The fascists faltered. We put all of our infantry and the Yugoslav infantry on tanks and trucks, and dashed full speed ahead to Belgrade. This was the beginning of its liberation. The end of the war found me in Vienna.

[Question] Thirty-eight years have passed since those days Comrade Chief Marshal of Artillery. The spring of 1983 is coursing through the land. But some in the world, burying in oblivion the lessons of the recent past, are again calling for a "crusade" against the USSR and socialism. What can you as commander-in-chief of the Strategic Rocket Forces say on this matter?

[Answer] U.S. President Reagan endlessly expounds about the imaginary "Soviet military threat." The stir raised by the current American administration is totally unfounded. History has never known the Soviet Union to brandish

weapons. From the first days of the existence of the Soviet government, while Vladimir Il'ich Lenin was still alive, our country precisely and clearly declared to the entire world that we had no and would never have any territorial pretensions toward anyone. The whole history of the Soviet State incontrovertibly indicates that our people and the Communist Party of the Soviet Union are sacredly fulfilling this behest of Lenin.

Mr. Reagan zealously harangues about the possibility of a "preemptive nuclear strike." In this regard it is necessary to mention several new facts about the inhuman and militaristic policy of the U.S. administration. The readers of LITERATURNAYA GAZETA certainly remember well that not so long ago the American administration in fomenting the arms race adopted a decision about the series production of neutron warheads. The objective of this criminal weapon is to kill everything living while leaving only industrial targets untouched, and it is easy to guess the intended strategy of neutron war. But even such an inhuman weapon of mass annihilation of people has turned out to be insufficient for President Reagan.

It is well known that intensive research is underway on the "third generation" of nuclear weapons in the laboratories of Edward Teller, the American nuclear scientist, and in other U.S. scientific research institutes. This concerns the combat application of electro-magnetic pulse. What does this mean? It is known that in a nuclear explosion a short-lived electro-magnetic pulse is instantaneously discharged. The U.S. administration tasked its scientists to develop "third generation" bombs (the first generation was atomic; the second nuclear) having intensified electro-magnetic pulse. The calculation of the American fathers of this new barbarian weapon is simple: Via a simultaneous, sudden explosion over the territory of the Soviet Union of several such bombs at an altitude of 400-450 kilometers, to completely destroy our system of command and control communications, and temporarily deprive us of the possibility of rapidly inflicting a retaliatory strike. Subsequently, exploiting this pause, they would carry out a massive strike with the entire might of the American triad (ground, sea and air based missiles). And this plan Reagan puts forth as a "defensive weapon." What sort of "defensive weapon" is this? Any person even slightly acquainted with military affairs understands perfectly well that this is an absolutely real offensive first strike weapon. Obviously President Reagan and his closest advisors, including Secretary of Defense Weinberger, do not know the Russian saying that every stick has two ends.

What can be said about all this? It is an illusion--an extremely dangerous and harmful illusion! Why? Because in fulfilling the command of our homeland we consider it our sacred duty to maintain the combat readiness of our Strategic Rocket Forces at such a high level as to make it impossible for nuclear war to erupt.

Our constant combat readiness is a compulsory but extremely necessary measure, and a main deterrent against the aggressive strivings of hostile forces. And this preparedness is maintained with the humanitarian objective that destructive nuclear weapons will never be used by anyone.

The Soviet Union will never allow the imperialists to destroy the existing military balance. The imperialists know well that we are prepared to answer any strike with an annihilating retaliatory strike. Marshal of the Soviet Union D. F. Ustinov, member of the CPSU Central Committee Politburo and USSR minister of defense, declared during a recent visit to the USSR:

"If Washington calculates that we will answer their use of Pershing missiles and cruise missiles by strikes only against targets in Western Europe, then they are profoundly mistaken. Retribution will inevitably also follow against the United States itself." In my opinion that statement is absolutely clear.

The USSR and the socialist community have stood and continue to stand for peace and the security of all countries and peoples. Victory Day is an authoritative reminder to all that the Soviet Union and the world's peace loving peoples destroyed in order that mankind could live in peace. Today on our beautiful planet powerful forces exist which are adequately capable of standing for this!"

9069

CSO: 1801/304



## CIVIL DEFENSE

### SHELTER CONSTRUCTION, EQUIPMENT-DESCRIBED

Moscow VOYENNYE ZNANIYA in Russian No 3, Mar 83 (signed to press 8 Feb 83) pp 24-25

[Article by G. Penzev, civil defense instructor, Moscow: "Shelter Construction"]

[Text] One of the important tasks of civil defense is to protect the population from weapons of mass destruction. The group leader must keep in mind the fact that success in training will depend upon the extent to which he is able to convince people of the reliability of various means of protection. So he should begin any characterization of protective structures with an explanation of their structural characteristics. He should explain, for example, that only in a zone of total destruction is it possible that a few shelters will sustain damage. This zone, however, will comprise only a small part of the area of a center of destruction. Antiradiation [fallout] shelters are particularly effective in rural areas, and the thicker the layer of dirt around them and the denser the construction in the surrounding vicinity, the more the dose of radiation will be decreased.

The lesson entitled "Blast Shelters and Fallout Shelters—Reliable Means of Collective Protection" has been allotted three hours divided into two sessions of instruction. The first session will be conducted in a blast shelter [ubezhishche]. The instructor should first describe its physical characteristics, pointing out how the place is laid out and equipped, and then conclude the session with work and exercise based on Norm No. 5.

In beginning his presentation of the material for the first session (1 hour), the instructor reminds trainees that sheltering the population is one of the primary methods of protection. He then proceeds to categorization and characterization of protective structures. They are divided into blast shelters, fallout shelters and simple shelters, that is, trenches or basements adapted for this purpose.

Blast shelters provide protection against the effects of all destructive factors of a nuclear explosion as well as against toxins and bacterial agents. They must be able to withstand substantial shock wave pressures and be made reliably air tight, waterproofed and heat-insulated. What with the fact that blast shelters are constructed in advance of the time when they would be needed, they will be used in peacetime for production, cultural or personal-service purposes (garage, warehouse, training facility, etc.). Depending upon the location involved, they will be either built in as an integral part of an existing structure or separately standing and should be sited as close as possible to the place of work or residence of those who will use the shelters.

If existing protective structure capacity proves inadequate when enemy attack threatens, blast shelters will be constructed which can be built quickly out of reinforced concrete structures (drainage collectors, large-diameter, blocks, cover plates) as well as lumber and rolled metal. These will be provided with both industrial as well as more simplified equipment such as air-tight protective doors, protective ventilation systems and air feed and purification equipment.

The blast shelter will consist of a main area designed to accommodate the inhabitants as well as auxiliary areas, entrances, a filter and ventilation chamber, toilet facilities, and in some instances sections to accommodate a protected diesel electric power plant and an artesian well.

Blast shelters must have one emergency exit. In the case of detached blast shelters, this may be one of the entrances situated outside a zone of possible obstruction.

Blast shelter capacity is determined by the shelter area computed on the basis of at least  $0.5 \text{ m}^2$  per person in shelters with double bunks,  $0.4 \text{ m}^2$  per person in the case of triple bunks. The internal volume of a facility must accordingly be computed on the basis of at least  $1.5 \text{ m}^3$  of air per person. There will possibly be instances in which for brief periods a shelter will have to hold more people than its capacity would permit by this standard.

Water will be supplied by links with the municipal water system. Containerized reserves of drinking water will be built up as well. Protected artesian wells will be provided to supply water to a group of blast shelters.

The blast shelter is equipped with communication and warning equipment connected to the facility or municipal system (loudspeaker, telephone). Here also will be centralized fire-fighting equipment, tools and implements for conducting rescue operations and instruments for radiation and chemical reconnaissance. Medical aid stations are set up in the larger blast shelters, first-aid stations in the smaller ones. Food supplies are laid in upon instructions from the facility CD chief at the threat of enemy attack.

The instructor now takes the group of trainees around through the blast shelter. In the filtering and ventilation chamber he describes the air supply system and demonstrates the procedure involved in switching from one mode of operation to another. The following modes are available: pure ventilation supplying outside air through an oil filter which purifies it of dust, including radioactive; filtering and ventilation, in which mode outside air is purified of radioactive dust, toxins and bacterial agents and the full isolation mode, in which the air is regenerated if the shelter is located in an area of mass-scale fires and high levels of gas contamination or becomes contaminated by highly aggressive toxic agents.

After demonstrating the procedure employed in switching the filtering and ventilation system from one mode to another, the instructor will then suggest that trainees try their hand at operating the manual electric ventilator. Here he explains that the manual drive needs to be turned at a rate of at least 35-45 rpm, otherwise the air intake will drop sharply.

Trainees are then familiarized with arrangements at the entrance, the double-door air lock and the air-tight doors. The doors have rubber sealing and wedged closing devices. The instructor also shows trainees where valves for turning off water and sewer lines are located. Everyone then proceeds to the emergency exit, they open the

cover (air-tight door) and make their way to the surface through the emergency exit and along an underground tunnel. At this point they inspect the cap assembly located in an unobstructed area.

The instructor then sets forth the rules governing the maintenance and occupation of the shelter as well as conduct inside it. A maintenance team, the leader of which is commandant, is responsible for maintaining the shelter. The team prepares the shelter for occupation, supervises their accommodation within the shelter and then sees that shelterers abide the rules of conduct. Signs indicate the way to the shelter. During the process of occupying the shelter there can be no panicking, pushing and shoving or obstruction of corridors or stairs in narrow passageways. The elderly, the sick and parents with children should be accommodated first. The order in which shelters should be occupied with respect to place of work and residence is worked out beforehand and practiced during drills and exercises.

Inhabitants will not be allowed to bring highly flammable or strong smelling substances, large, cumbersome items or animals with them into the shelter or to move about the shelter needlessly, to make noise, to smoke or to use lamps with open flames. No one will be allowed to leave the shelter without permission of the commandant. Inhabitants will be organized into shifts and take turns resting on the bunks. The elderly and children will rest during the first period. Inhabitants will be permitted to listen to the radio and read.

The second session of instruction on Lesson 6 will last two hours, one hour of which should be devoted to practical exercises. The subject covered during this period of instruction will be fallout and other of the simplest variety of shelters. These shelters are constructed where people can be exposed to the effect of low-pressure shock waves and radioactive contamination. If they were to remain outside a shelter they could be contaminated by inhalation or ingestion of radioactive substances as well as by external radiation.

Fallout shelters protect people from penetrating radiation, provide them partial protection against shock waves and keep drops of toxins from coming into contact with their skin and clothing.

Fallout shelters [ukrytiye] are constructed in rural areas and small towns, which are unlikely to be targets of nuclear attacks. The protective characteristics of fallout shelters are determined primarily on the basis of their radiation attenuation factor, which shows how many times less the dose of radiation is in a particular shelter than in an open unprotected area. It is best to use basements. Basements in wooden buildings have an attenuation factor of 7-12, those in stone buildings a factor 200-300, while the basements of multistory buildings have a radiation attenuation factor of 500-1000. In rural areas cellars, basements and other underground facilities as well as space on the first floors of stone buildings will be adapted for use as fallout shelters. They have to be redone to some extent to increase their radiation attenuation factor and equipped with the simplest of life-support systems. If necessary their windows, unneeded doors and other openings are faced with brick, sandbags or other available materials; a layer of dirt 60-70 cm thick is spread over ceilings, which if necessary are reinforced by additional supports. Walls rising above ground level are also protected on the outside with dirt.



Fallout shelters are provided with natural or forced ventilation. Natural ventilation is provided in shelters located on ground and first floors as well as in basements and quick-built fallout shelters accommodating up to 50 persons. Forced ventilation is used in shelters for more than 50 people located in the basements of buildings and on ground and first floors where it already exists for routine peacetime use.

One method of ventilation is the natural through ventilation method. To prevent radioactive fallout from entering the shelter, air intake ducts must be raised 1.5-2 m above the ground and be fitted with protective deflector plates and tightly fitting shutoffs. To create a draft, the openings for incoming air are located in the floor, the exhaust vents in the ceiling. Flue systems and the ventilation ducts in urban structures can be used instead of an exhaust duct in buildings heated by furnace.

If enemy attack threatens and there is a shortage of these more substantial protective structures, quick-built blast shelters will be constructed in large cities and towns, quick-built fallout shelters in rural areas. The simplest slit shelters will also be built. A slit shelter properly dug and covered and with a protective layer of dirt at least 70 cm thick will provide reliable protection against light radiation and partial protection against a shock wave and attenuate a radiation dose some 200-300 times. It will also prevent clothes and skin from coming into contact with drops of toxins, radioactive fallout and bacterial agents and protect against injury by debris from the destruction of nearby buildings. Slit trenches are dug outside a zone of possible obstruction (at a distance from a building at least equal to its height). It will initially be constructed as an open trench and then, as time and materials permit, it will be covered.

Slit trenches are not dug closer than 10 m from one another. A slit trench for 10-20 people, for example, must, as a rule, have one entrance from the side opposite the center of town or large facility which might be the target of a nuclear attack. Entrances will consist of steps at a right angle to the trench. A door is hung or the entrance otherwise covered with an attached panel or mats made of poles or branches and screened by two layers of canvas or burlap. In large cities it will be best to mount two doors at an entrance with an air lock between them and thereby to do everything possible to bring the protective characteristics of the trench up to the level of those of a quick-built blast shelter, up to those of a fallout shelter in rural areas.

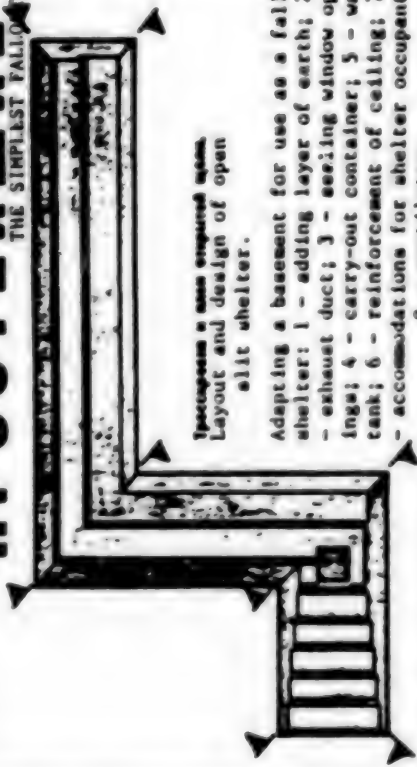
The walls of a trench in loose soil will have to be covered with boards or poles and lined with fascines made of branches or corn or sunflower stalks. Logs, railroad ties and pieces of reinforced concrete or metal will provide materials for a cover. The supporting ends are at least 50 cm from each side. The cover is then waterproofed with tar paper, rubberized roofing paper, film or clay; that covered with a layer of dirt at least 70 cm thick and sod laid on top of that. On the side opposite the entrance, an exhaust duct made of wood, sheet metal or asbestos cement pipe is mounted on the shelter roof 1.5-2 m above the ground.

When the instructor proceeds to familiarize trainees with the layout of fallout shelters and slit shelters, he will draw the various parts of these structures on the board or show posters or slides.

The last hour of instruction will be spent at a training site. The instructor divides his group into three teams: one will lay out and excavate a shelter, the second will prepare material for the roof while the third will install the door, exhaust duct and



# ПРОСТЕЙШИЕ УКРЫТИЯ THE SIMPLEST FALLOUT SHELTERS

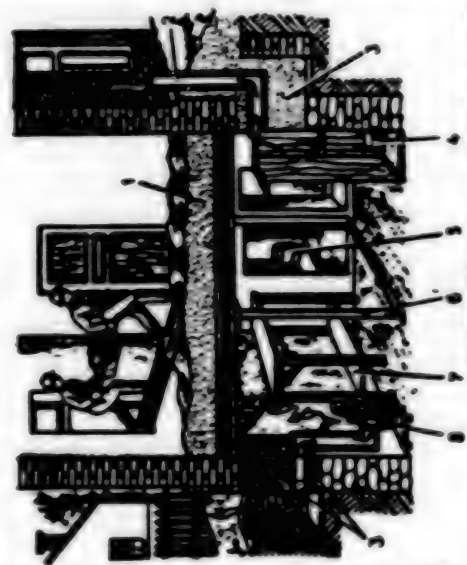


Проектируем и строим укрытие  
Layout and design of open slit shelter.

Adapting a basement for use as a fallout shelter: 1 - adding layer of earth; 2 - exhaust duct; 3 - sealing window openings; 4 - carry-out container; 5 - water tank; 6 - reinforcement of ceiling; 7 - accommodations for shelter occupants; 8 - ventilator.

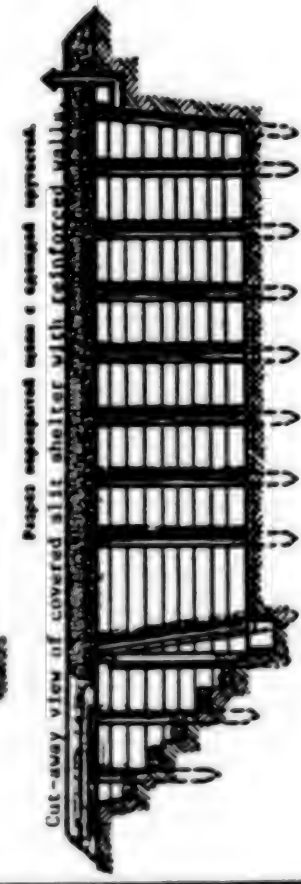


Проектируем и строим  
Gross section of open slit shelter.

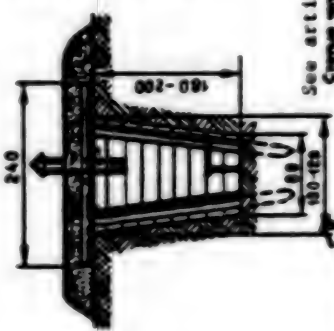


Проектируем и строим  
Construction of covered slit shelter with reinforced walls.

Construction of covered slit shelter with reinforced walls: 1 - adding layer of earth; 2 - exhaust duct; 3 - sealing window openings; 4 - carry-out container; 5 - water tank; 6 - reinforcement of ceiling; 7 - accommodations for shelter occupants; 8 - ventilator.



Проектируем и строим  
Cut-away view of covered slit shelter with reinforced walls.



Construction of covered slit shelter with reinforced walls: 1 - adding layer of earth; 2 - exhaust duct; 3 - sealing window openings; 4 - carry-out container; 5 - water tank; 6 - reinforcement of ceiling; 7 - accommodations for shelter occupants; 8 - ventilator.

See article on Page 24.  
См. статью на стр. 24

benches. The shelter will not be completely fitted out in the course of this hour, of course, but work on it can be continued by succeeding groups of trainees.

The shelter is laid out as follows: pegs are driven into the ground at the corners and a string stretched between them; a trench is opened up along the string, the sod removed and laid aside. Dirt will not be thrown within an area extending 50 cm from the line. As the depth of excavation increases, the walls of the trench are evened up and sloped. The angle of incline will depend upon how solid the ground is. The sod is laid back on after the cover is in place, waterproofed and covered with a layer of soil. A drainage channel is dug along the floor of the trench with a water-collecting sump at the entrance. A ditch is dug around the trench to drain off surface water.

As the work proceeds the instructor explains that manual excavation of a trench for 10 people will require the removal of 12-15 m<sup>3</sup> of earth and take 25-30 man-hours. This means that three people can dig a trench like this in 10-12 hours. It will require roughly the same number of people and the same length of time to line the walls and roof the trench. So in the course of a day six people can build a slit shelter for 10 people. Construction will require the following materials: round timber for the roof - 1.7 m<sup>3</sup>; boards, poles or branches for the walls - 1.3 m<sup>3</sup>; rubberized roofing paper [rubroid], tar paper and film - 20 m<sup>2</sup>; clay - 2.5 m<sup>3</sup>; fiber packing (moss) - 3-5 kg; nails - 250-300 kg. Tools required: 2-3 spades, a pick, a crowbar, 2 axes, cross-cut saw, hammer and pliers.

The instructor must also discuss rules governing during shelter occupation: rules of conduct established by the local staff are to be observed strictly; for the first 3-5 hours of the contamination period the door and cover at the entrance and the ventilation system must be kept closed; every 5-6 hours the exhaust ducts can be opened for 15-20 min for ventilation, but if the wind is blowing toward the entrance the door and ventilation system are to be kept closed; the ventilation duct shutoff must be closed when the door is opened, and only 10-15 min after it is closed can the exhaust be opened; entrance door and ventilation duct must be closed while shelterers eat; foodstuffs and water must be stored in closed containers; no smoking in the shelter; if someone must leave the shelter and enter a contaminated area he must wear individual protective gear, and when he returns he must shake dust off outer garments, head gear and footwear outside the shelter and carefully remove them and leave them in the air lock.

The length of time people must remain in their shelter will be determined on the basis of the situation as read by the local CD staff. Inhabitants will employ the same procedure in exiting damaged fallout shelters as is employed in exiting blast shelters; Inhabitants will clear away debris from the inside out; a few individuals will make their way to the surface first; they will then help those who cannot get out on their own (injured, sick and elderly inhabitants and children); all remaining inhabitants then exit the shelter.

If work on the construction of a shelter has been completed or there is already a slit shelter at the site where instruction is conducted, the instructor will go through Norm No. 6 with the group.

At the conclusion of the session, the group instructor will briefly run over the principle questions which have been covered and remind trainees that during the final session they will be tested on their mastery of this material; they should therefore prepare for this test ahead of time.

COPYRIGHT: "Voyennyye znaniya", 1983

8963

CSO: 1801/265

## CIVIL DEFENSE

### LESSONS IN USE OF GAS MASKS, RESPIRATORS

Moscow VOYENNYE ZNANIYA in Russian No 3, Mar 83 (signed to press 8 Feb 83)  
pp 26-27

[Article by Engineer Colonel V. Viktorov: "Gas Masks and Respirators"]

[Text] A number of terms, concerning in particular the filtered gas mask, have been clarified in connection with the introduction of the new state standard. Thus, instead of the concept "gas mask size," a new concept, "face piece size," has been introduced. Names previously adopted have been changed: inlet and outlet valves have become the "inhalation valve" and "exhalation valve;" the respirator filter canister has become the "filtration and absorption canister;" the eyepieces--the "eyepiece unit;" and the gas mask carrying case--the "carrying case for gas mask."

The theme, "Devices for Protecting Respiratory Organs" is planned for one hour. For this lesson it is necessary to prepare in advance, preferably for the whole group, various types of individual protection equipment, in order that the students can picture the external appearance of all the civilian filtered gas masks: GP-5, GP-5m and GP-4u. R-2 respirators, cloth dust-proof masks, and material for demonstrating preparation of cotton gauze bandages are also needed.

The leader begins the lesson with a discussion about the main filtered gas mask, the GP-5, which is intended for the adult population.

The GP-5 and other gas masks protect against modern means of mass destruction: toxic substances, biological aerosols and radioactive dust. Reliable protection will be obtained only through timely and proper use.

The GP-5 civilian gas mask consists of a filtration and absorption canister and a helmet-mask type facepiece (ShM-62U, ShM-62). The system includes a carrying case for gas mask and a box with membranes for protecting the glass of the eyepiece unit from fogging.

The basis of the protective principle is that preliminary purification of the air of harmful contaminants in the form of steam, gas and aerosols will take place in the filtration and absorption canister. The canister, which is cylindrical in shape, has a special absorbent and anti-aerosol filter for this purpose. The face piece is joined to it via a threaded

opening. At the bottom of the canister there is a round opening, through which air passes into the facial portion to be inhaled; the air has been first purified in the filtration and absorption canister. When storing the gas mask, a cap with a rubber gasket is screwed on to the opening, and the bottom is covered with a rubber plug.

The ShM-62y face piece protects the face and eyes. It consists of a rubber body with an eyepiece unit and valve holder. On the chin portion there is a number indicating the size. There are five sizes in all: 0, 1, 2, 3, and 4.

An inhalation valve and two exhalation valves are mounted in the valve holder. These are very important parts. If they are obstructed or defective, contaminated external air will penetrate the mask.

The mask is stored and carried in the carrying case. It has a shoulder strap with two movable clasps and a strap for fastening it to the body. Additionally, it has two pockets for individual packets of bandages and anti-chemical supplies, and a pocket for a box of anti-fogging membranes.

Preparing to use a gas mask should begin by selecting the face piece size. It is determined by measuring the head along a closed line (through the crown, cheeks and chin), usually with a centimeter tape measure. The result obtained is rounded to the nearest half-centimeter. Here is a table of face piece sizes:

<u>Measurement</u> <u>(cm)</u>	<u>Size</u>
Up to 63.0	0
63.5 - 65.5	1
66.0 - 68.0	2
68.5 - 70.5	3
71.0 and larger	4

A properly selected face piece should fit the face snugly so that the external air does not enter under the face piece, by-passing the filtration and absorption canister. The working condition of the mask should be checked by inspecting it and testing its hermetic seal.

During the external inspection the face piece is checked to see that it is intact. The face piece is slightly stretched, revealing pin-holes (breaks). The students see whether the glass of the eyepiece unit is unbroken, whether the inhalation and exhalation valves are present and functional, and whether there are dents, rust or holes in the rubber ring gasket in the opening of the filtration and absorption canister. They also check for the presence of the anti-fogging membranes in the box. Then they inspect the case. Does it have a button, a loop, a strap and clasps?

Then they determine the overall working condition of the gas mask. For this they put on the face part, cover the opening in the bottom of the canister with their palm (or the rubber plug), and inhale deeply. If air does not



enter the facial portion (it is not possible to inhale), this means that the gas mask is functioning. If air does enter, the mask cannot be used. The defect has to be found.

To do this, unscrew the filtration and absorption canister and see whether there are rubber ring gaskets in the opening of the facial portion. Then the overall operability of the gas mask is again checked. If the air again penetrates the face piece, it should be exchanged for a new mask.

It is also necessary to be able to use, if only briefly, a gas mask which has been damaged during operation. A broken place in the facial portion should be tightly pressed to the face with fingers or palm. If the glass is broken, if the exhalation valves are damaged, it is necessary to hold one's breath, close the eyes, quickly take off the facial portion and unscrew the filtration and absorption canister. Then put the canister opening in the mouth and breath directly through it, holding the nose and not opening the eyes. In the event of a small hole or puncture in the filtration and absorption canister (below the ridge), the hole should be stopped up with clay or modeling clay.

Next the leader moves on to the R-2 respirator, which is designed to protect the respiratory organs only from radioactive dust. It is a filtration semi-mask with two inhalation valves, an exhalation valve and a nose clamp. The contaminated air is purified in passing through the external layer of the semi-mask, which is made of polyurethane, and through the internal layer of polymer fiber filtration material. The respirator is fastened to the head with the aid of stretchable and non-stretchable bands connected with buckles which permit regulating the headband size. The R-2 respirator has three sizes. The size is selected by measuring the length of the face--the distance between the point of the greatest depth at the bridge of the nose and the lowest point of the chin. Up to 109mm is size 1; from 109 to 119mm is size 2; and more than 119mm is size 3.

After selection the respirator is tried on. The semi-mask is worn on the face so that the chin and nose are covered. Then the headbands are tightened, with one band placed at the nape of the neck and the other on the forehead. The length of the elastic bands is regulated by clasps. The nose guard (above the mask) is pressed to the nose.

Since under some circumstances it is necessary to use the simplest means of protecting the respiratory organs from radioactive dust, the lesson leader shows the cloth dust-proof mask and the cotton gauze bandage. They can be made at home. The cloth dust-proof mask consists of a body with eye holes and a holder. To put it on, the lower part of the mask is held in both hands and, snugly holding it to the chin, the holder is put on the head and the mask is stretched over the face. The cotton gauze bandage is prepared in a few minutes. A two centimeter layer of cotton (30 x 20cm) is placed in the middle of a 100 x 60cm segment of gauze. The edges of the gauze are folded over the layer of cotton, and the ends are cut 30 to 35cm on each side. The bandage covers the nose and mouth, and the cut ends are tied--the lower at the forehead, the upper at the nape of the neck.

The lesson must show how to put a gas mask on an injured person if he is unable to do it himself. The leader demonstrates these techniques together with an assistant from among the students. Afterwards, all must pass norm No 3, and must know what errors are impermissible in fulfilling this norm.

The lesson must include how gas masks and respirators are stored. For long-term storage they are kept in the factory packaging (box) in dry, unheated warehouses. Usually individual protective devices are concentrated in a common civil defense warehouse of the enterprise (or in a warehouse at the shop or section). They are given out to the shop representatives according to previously written invoices, and are transported on factory vehicles. Protective devices are passed out to workers and employees at a specially established distribution point. In so doing, the size of the face piece of the respirator is determined for each individual if this has not been done previously. The recipients of the gas masks assemble them, wipe them off, check and carefully adjust them.

A few words must be said about the rules for decontamination of individual protective equipment. After use in terrain which is contaminated by radioactive substances, the external surfaces of the face piece and the filtration and absorption canister are wiped off several times with a damp cotton swab. If decontaminating solution is available, it is used to decontaminate the facial portion of the gas mask.

Dust is removed from the external surface of the respirator semi-mask by carefully knocking or tapping it against some object, and from the inside by wiping it with a damp cotton swab.

Gas masks which are contaminated with toxic substances or biological aerosols are collected and sent to the decontamination point.

Lessons on this theme must include a demonstration, at first separately, step-by-step, of the techniques for donning a gas mask, with impermissible errors explained. Then fulfilling the norms within time limits is demonstrated. The students are trained on and pass Norms 1, 2, and 3.

COPYRIGHT: "Voyennyye znaniya", 1983

9069

CSO: 1801/265

END

**END OF  
FICHE**

**DATE FILMED**

July 1<sup>st</sup> 1983